ISSN 0310-222X

EARTH GARDEN

-natural living and growing

Country Cottages

- THE GYPSY TRUCK
- HARMONY FARM
- ALL ABOUT PIGS
- GYRO WIND PUMP
- SOURDOUGH BREAD
- CHERISH THE EARTH
- LAW OF THE LAND
- WEAVE A REED HAT
- A-FRAME BUILDING
- TAPERS & CANDLES
- MAKE AN INKLE LOOM
- CONSERVATION KIDS

No. 8
MARCH, 1974

GAS POWER: GEORGE CHAN'S METHANE DIGESTER & WATER-WASTE-FUEL-FOOD CYCLE

$1
AUTUMN

Registered for posting as a periodical. Category C.

TREE

and a tree spoke to me
it said "i am"
"why don't you climb up —
— and take the breath that i am
and to know, the more you laugh
the more you make me
so come up and wake me
as too many only give me sleep"
SUZY WEIGHT

EARTH GARDEN No. 8

EARTH GARDEN presents a range of natural lifestyles. It is intended as a key to sources, practical ideas, alternatives and self-sufficiency.

EARTH GARDEN is concerned with non-polluted living and growing, the back-to-the-earth movement, surviving in the city, the bush, food and diet and the inner changes which follow when you are in tune with Nature.

Let us lead you up EARTH GARDEN's path to the good life.

There are still no advertisements in EARTH GARDEN. Books, places and products recommended are those we think relevant.

Edited and published by Irene and Keith Vincent Smith.

Illustrations by Helen Haggath.

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THE COVER: Front: Cottage garden at Maltingley, Hampshire — from The English Flower Garden, 1883.
Back: Lunch at the garden table — from Thomas Hyll's The Gardener's Labyrinth, 1577.

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Land Lines

Land lines is a free service for EARTH GARDEN readers. It is intended to help those seeking to buy or sell land or searching for it, and those joining together for group land buying or allied reasons. It is not a lonely hearts column.

Readers must give their full names and addresses as proof of their sincerity. They have the responsibility to thoroughly check all deals.

Would there be anyone in the Canberra-Queanbeyan area willing to give me a hand in the vegetable-fruit-herb garden on a share-the-products basis?

Petrus C. Heyligers, "Roemah Senang", 3 Booth Street, Queanbeyan, NSW, 2620.

HELP! Forbes has not got a health food shop!!!

Every town has one . . . except Forbes. Nearly 8000 people here, more in Parkes, 20 miles away . . . and it's 60 miles to the nearest shop. So won't some storekeeping type please move up here and save us?

We have the Vintage Village project going well up here now — should bring lots of interesting people to town. There's to be a large farm using horse-power entirely, sections with herbs and a vast re-afforestation and wildlife protection programme.

There are houses here made of bark, mud, poles, with tin roofs, shingle roofs, thatch roofs, and steam engines, etc. There is going to be an opening for quite a few craft folks in the leatherwork, potting and metalwork fields. Just about anything could happen, so it's worth looking into!

Regards, Sam Lewis, PO Box 250, Forbes, NSW, 2871.

Build your dome at Paradise Retreat!

Who will join us, build our Community? We are looking for people of like mind who long to live in a natural and simple life in the mountains, who love Peace and Harmony, and are creative, and aim to be self-supporting.

We would love to hear from you, Angela Uecker, Paradise Retreat, Mt Margaret Road, Marysville, Victoria, 3779.

I am a lady schoolteacher (not a young person), keen to start growing berries on my small country acreage. To learn as much as I can about berries, particularly youngberries, I would be happy to visit and work on a berry plantation for a few days either during the Easter or May holidays.

I cannot plant before September and realise there will be no picking at those times, but I am prepared to do any light farmwork, such as weeding rows, mulching, or cleaning out the fowlhouse in exchange for the experience.

Lili Heyde, 36 Moore Street, Lane Cove, NSW, 2066.

We have a 160-acre property between Benalla and Mansfield, with a bracken problem. It is very hilly, with bracken covering about 50 acres and rapidly increasing. We have no tractor or other machines to get rid of it, so we have tried hand slashing.

This is a long hard job, and, as we all live in Melborne we can only get up there occasionally. So, with the threat of bracken over-running the place, we need to do something desperately. Any suggestions?

Armstrong Family, 21 Oxford Street, Burwood, Victoria, 3125.

I have an option on almost 900 acres of land a few miles out of Bellingen, NSW, which could be divided into several farms of about 120-160 acres.

I would like to get in touch with EARTH GARDEN type people who would be interested in acquiring some of this land at about $50 to $150 an acre, depending on quality. (The going rip-off rate in the vicinity is $400 to $650 an acre.)

Some of the land is all bush, some is partially cleared; some is good quality grazing and agricultural land. It is in a high rainfall area and there are good creeks and a major river. As I'll soon be moving into the area with my family, I'm trying to attract people with similar interests in subsistence farming. Already I have four or five family groups interested in acquiring some of the land. There is room for more — especially younger people.

I have contour maps and aerial photographs of the property, and inspections could be arranged at fairly short notice for the right kind of people who are genuinely interested.

Sincerely yours, Brian Walker, PO Box 121, Avalon , NSW, 2107. Telephone 918 9152.

I am an energetic, quiet-living trained nurse, now partly established on my 10-acre farm with show dogs, goats, ducks, hens, tortoises and vege garden.

Have had a new house built of insulated aluminium, with still some painting left to do. The electricity is now connected. There is a weekend roadside shop selling fruit, veges, arts and crafts and plants and seedlings.

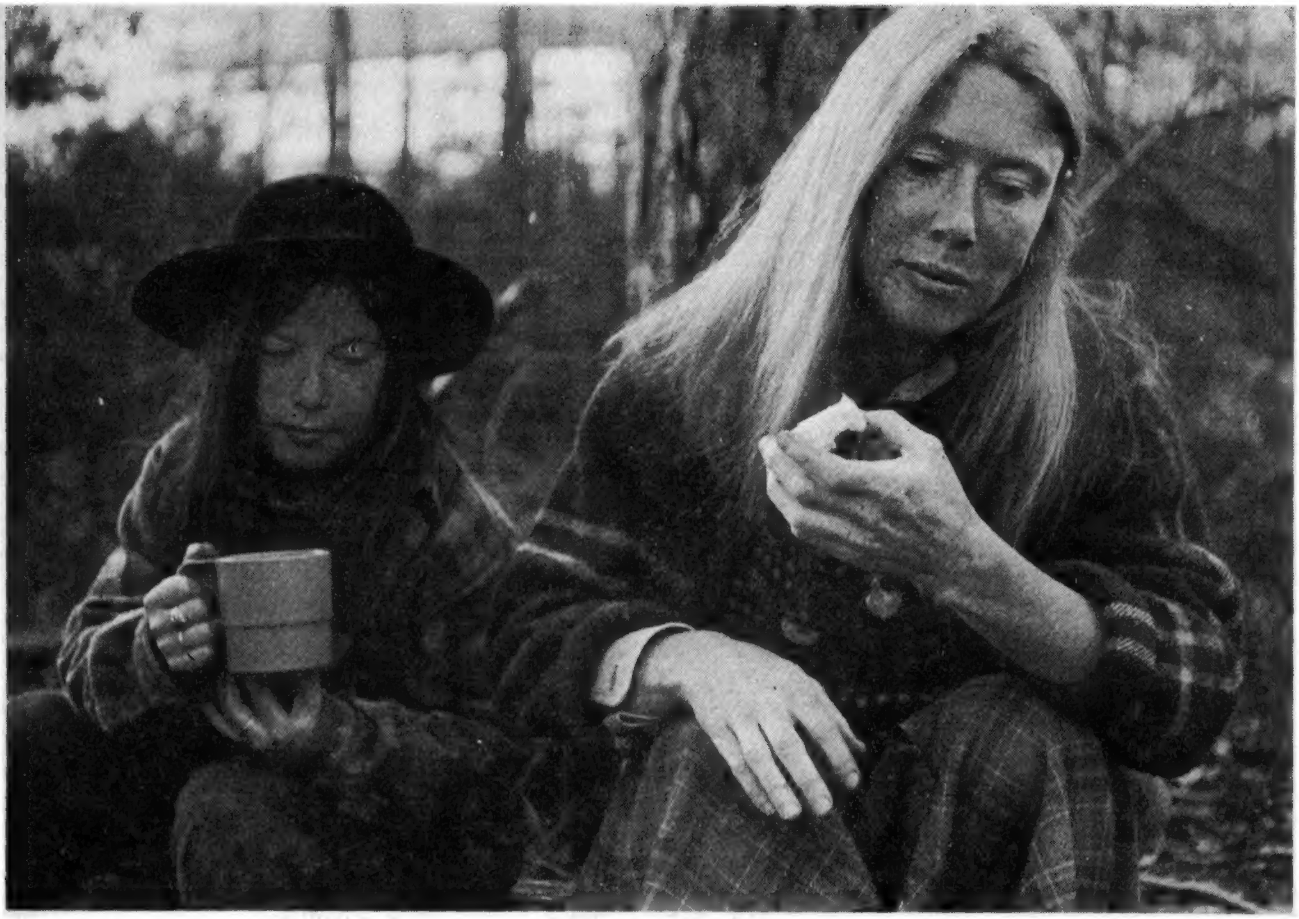
Is there an honest lady with the same interests who would like to share expenses and join me? Yours sincerely, Nyra Pillinger, Burlea County, Jimboomba, Queensland 4280.

Howdy you all, we're looking for a tape exchange in Australia. We do this in 11 countries now, including Russia, Germany, England, South America, Mexico, Korea, Bermuda and Alaska.

We are both retired, I'm 64, my wife 68 (looks 40!), health nuts, have a trailer park on our farm of ten acres (no chemicals) and a health store next to the house.

Most of our tape friends are under 30. We have made many friends this way. The tapes are 30 minutes each side, making one hour total. You can say so much in an hour that you cannot do in writing. If anyone wants to do this, just drop us a line and we will cut the first tape.

Geo R. Taylor, Taylor's Natural Foods, 6801 Oak Crest Drive East, Fort Worth, Texas, 76119, USA.



Rachel and Gael, gypsies of the morning.

BY TRUCK TO TASSIE

STORY BY GAEL KNEPFER DOUGLAS
PHOTOS: ED DOUGLAS

We were going on the road for two months.
From Nimbin to Tasmania — and back.
Ed and me and Rachel and Toby — and Rip, the dog!

So we decided to put a back on our truck. A space/time machine created consciously for a journey. Built under a mango tree outside our back door.

It took Ed almost three weeks of fairly constant work. Drawing, planning, finding materials, keeping the cost down, lying awake exchanging ideas, building, refitting, judging, painting, wondering . . .

Slowly the truck took on a different and
very strong image of its own.
A high, solid, proud, green and yellow gypsy wagon.
We had a canvas top made locally —
fitted like a drum and didn't leak.

Ed ordered a tiny wood stove from Herter's Catalogue, (Minnesota, USA). We installed that next to the back door, and carried a length of flue that we could attach when we needed to.

The children slept in the "crow's nest" above the cabin, which was also a good space for them for travelling.

Our bed was the 6ft width of the truck, by 3ft wide, with storage underneath. The rest of the 7ft truck-bed length was counter space. Underneath one side was a chest of drawers dovetailing into a long rack of pigeon holes, and on the other side, three deep pull-out bins.

The bins proved to be fantastic storage space — they were 18" deep and heavy. They held all the food, the bowls, the cutlery, pots, a couple of large plastic jars for flour, wheatgerm, cornmeal etc and I made some calico bags (better than jars) with draw strings, for grains, beans and nuts.

These took on any shape and fitted anywhere. We made peanut butter and marmalades before we left.

I guess we had the thought of maintaining some of our home eating rituals — and on the last night, as I packed the Eske with vegetables, cheese, yoghurt and butter from our farm, I wondered if we would be able to buy from farmers, or if we would become part of the consumer circuit, market-hopping.

Dawn on departure day —
we woke the children and resettled them back into their bed in the crow's nest — Rip snuggled alongside them.
Goodbye to farm and friends —
banging and bouncing down our dirt track,
The sun coming up slow and hot over the Nimbin rocks.
The truck felt like an enormous ship,
creaking, pregnant, lumbering, strong,
full and tight.
Ed and I silent.

That existential feeling — "Have we forgotten anything?" toothbrushes? FORTITUDE? oil? RESILIENCE? spanner? CONFIDENCE? spare petrol? HEALTH?
unspoken fears
quiet anticipation —
Down the dirt road and onto the paved
past the familiar miles
Picking up a rhythm
Onto the new stretches.
The children woke and knocked on the window —
"Good Morning" — the first of seventy on the road.
The sun climbed higher.
We were hungry and I thought of the Festival in Nimbin. All those people coming together, camping out, cooking, eating, tribally sharing each day and each phase.
The security of the brotherhood
the encouragement.

Fisherman R. Maxfield of Coles Bay, Tasmania, making a crayfish pot. He uses tea tree from Smithton and bamboo from New Guinea.

Mr Maxfield has a fishing boat and takes his divers out each morning for a haul of Tasmanian scallops. Though a fisherman, he is ecologically concerned for the fishing industry and pointed out that a scallop must be five years old before it is mature enough to be eaten.

ON THE ROAD: Top right — Rachel prepared maté tea and raw vegetables with peanut butter. The camper's scale was in many ways more suited to the children. Note cubby-hole storage system.
Far right — Ed smiles as we wait for the ferry at land's edge in Melbourne.
Bottom left — Toby, Gael and friends on shearing day at Mary and Graham's in Castlemaine.
Bottom right — Our camp at Jackie's Marsh.

In the fields of Nimbin, beside the creeks, together, thousands of souls, sharing.
We felt our vulnerability,
The four of us and a dog,
Heading south.
Heading for Ken and Stephanie's in Orange, and on to Mary and Graham's in Castlemaine, and many unknown good people ahead . . .
This brotherhood is a linkage,
The links of a golden chain, that bind us all in this land.
With distance between us, and the nights under the stars.
That it takes to get there.
And the gum branches smouldering, and the tea being poured —
That it takes to get there.
Truck changing images, taking us there.
After each camp, order restored. We could find things
We had room.
Wildflowers stuck in the window grooves,
Feathers found, and tucked in to remember with —
The billy getting blacker.
The truck changing images.

In a bush camp, it was mellow, candlelit, familiar and comfortable.

In the traffic of Melbourne — it seemed like a monster — So hard to wield it's width and bulk through the lanes and lights. City people, intent and preoccupied, with their stepped-up pace, permeated our space.

The provisions and comforts of the camper were now inaccessible — back door jammed against next parked car. We locked the gypsy wagon, and headed off to the ferry office.
Space/time change again —
we visit my grandmother.

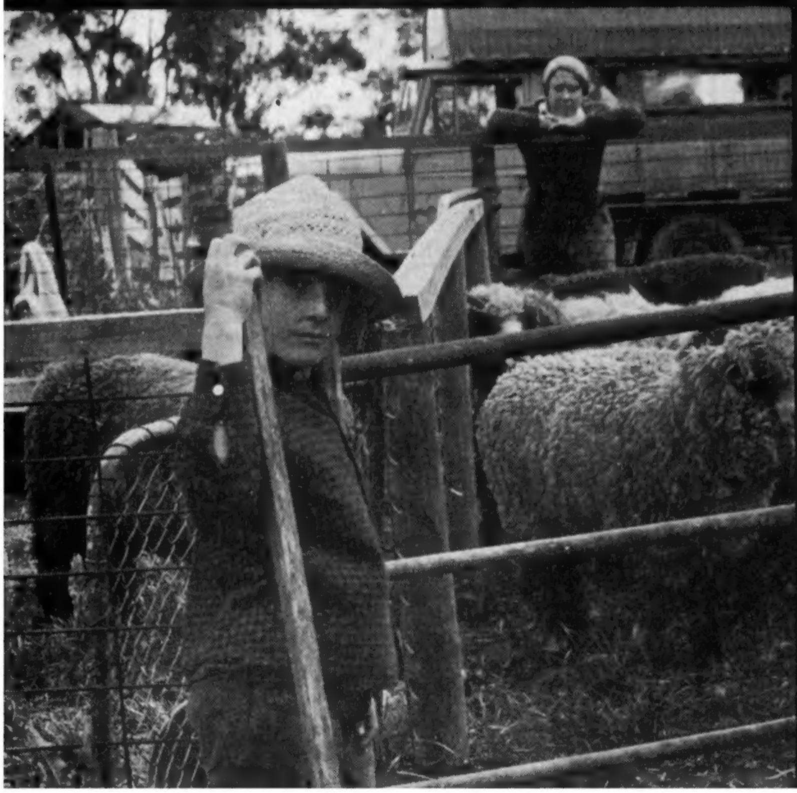
She recognised the truck — and what we were doing. She was raised out west on a station (Ed lifted her into our truck). She had travelled to town in a wagon with her father and brothers and sisters. She would wait in the wagon while her father went to the pub, and her mother bought sugar and flour and fabric.

Now a lined old lady in a soft dress, she settled in the pillows and remembered. She told her tale of when she first went to Tasmania. A bride bound for Queenstown in an old steamer — and how they picked their way up a muddy track to a mining town lit by lanterns.

She wished us well for our crossing.

Again changing faces, the truck went into the caravan line-up. Locked in the bowels of the ferry,
Riding the waves — travel without work!
We walked the decks and watched the stars replace Melbourne's electric lights.
In the morning, the albatrosses dived and swooped,

GMI 139



criss-crossing with the gulls, who fought for the throwaway breakfast hour. No doubt a routine for that group of gulls — to battle and travel with each ferry!

A rolling greyness heralded Devonport, and down the Tasmania road in the green truck.

Our first impression?
MOUNTAINS — real mountains, wooded
and breaking into the sky.
Our eyes felt relieved looking towards the mountains.

Fifteen minutes off the ferry and we were drawn up into the mountains.

The truck wound and climbed.
It grew colder.
Tasmania clothes came into the drawers,
The hooks now wore jackets.
The truck's changing faces.
A nest,
warm with the texture of fabrics and blankets.
We made camp by the River Forth.
We put on the chimney and lit the stove.
The windows steamed.
A gypsy wagon puffing smoke into the silent bush —
Hot chocolate, and dates and damper with raisins.
On an island in time
Miles in on a narrow timber track
Where the trees towered and arched
Leaving narrow ribbons of sky —
(like the buildings of New York).
But now more alike than chalk and cheese!
except perhaps, that each place can fit on a single map of its own.

One of the real beauties and singularities of Tasmania is the scale of the island.

With our conditioning to the mainland map, we would anticipate taking three or four times as long to get to a place. The change created a spontaneous feeling of festivity to our movements.

The scale seemed more suited to our human-ness. Farmers and fishermen, who gave us our vegetables and fish, were amazed at why we would **bother** to come so far — not just across the sea, but miles and miles across the mainland too.

Yet, they very much understood the survival aspect of travelling in a truck, and wanting fresh produce, which, no doubt, related to their own lifestyles.

The Tasmanian country people, by necessity, are very disciplined in their routines of growing, preparing, preserving, and conserving food and fuel, and there is a general feeling of compact resourcefulness.

Should the imminent food and fuel crises come to pass, Tasmania will probably fare far better than many other lands.

Horses and buggies could cover the distances quite comfortably, while mainland mileages will be impossible without machines.

Ed taught a photography workshop at TCAE in Hobart.

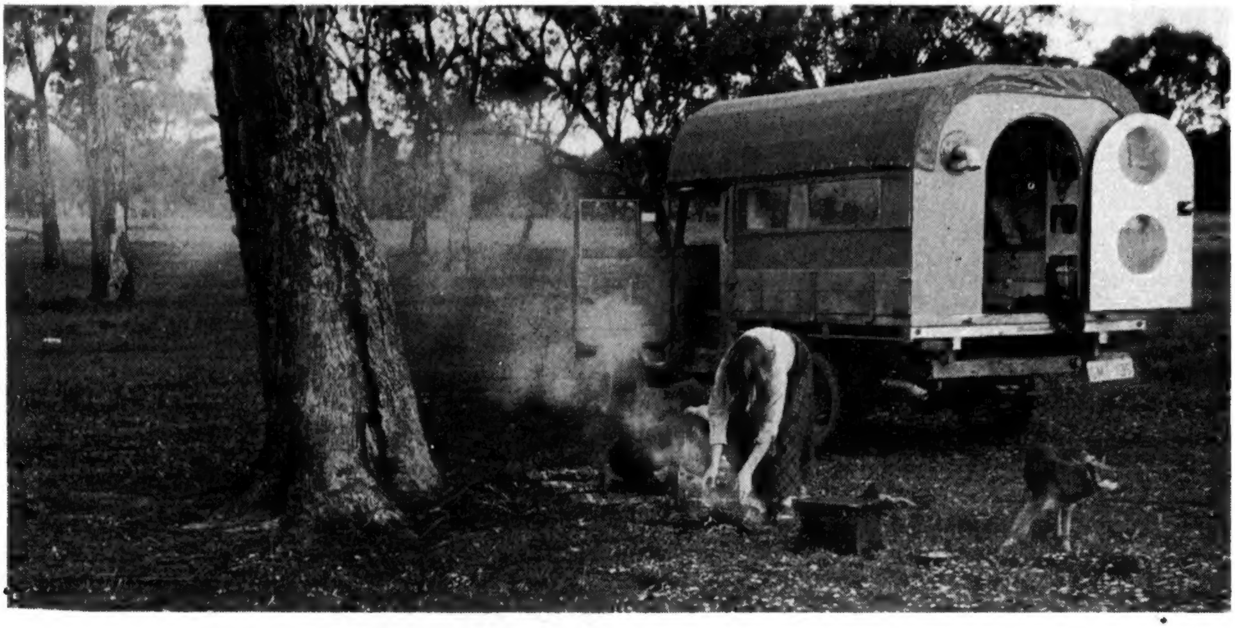
Truck changed faces and lived in a caravan park
We rented her a sister,
and spread ourselves between two spaces.
Enjoyed the showers
became part of a faculty
Ate pizza at the Palermo
and drank wine with friends.

Hobart is beautiful — and Salamanca Place, with people like Pete and Cass, another link in the chain.

A necklace of stones of quiet and pure colours
Regularly spaced with chain in between.
Trucks and vans and cars and caravans
travel this chain
Adding new stones,
Changing the colours, maintaining the linkage,
seeing, and sharing and shining.
The delicacy of the thread that is spun
when we travel,

Names and addresses and letters sent ahead, and meals shared and tales told, and more miles, and news from one to the other.

. . . the Earth Garden sub culture . . .



Gael starts the fire for lunch at Ben Lomond.

Our gardens similar — we often knew we were at the right place, because there was comfrey in the garden, and a compost bucket at the back door!

those little things feel good.
We had reached the pendulum point
of this necklace — and we turned for home.

There's a double feeling that happens when one is on the way home.

You're tired, and home seems like a distant sanctuary, but also, you are getting good at gypsying. Good at feeling relaxed about where you'll find a camp that night, fairly able at juggling the food supply and coming up with a balanced and tasty meal, sensitive to the subtleties of the new environments you are travelling through and in.

But homewards . . .
The circle being completed,
Treasures collected — scallop shells and stones,
Minds filled.
Homewards. Onwards,
across the miles for giants,
Hobbit miles behind,
and tireder . . .

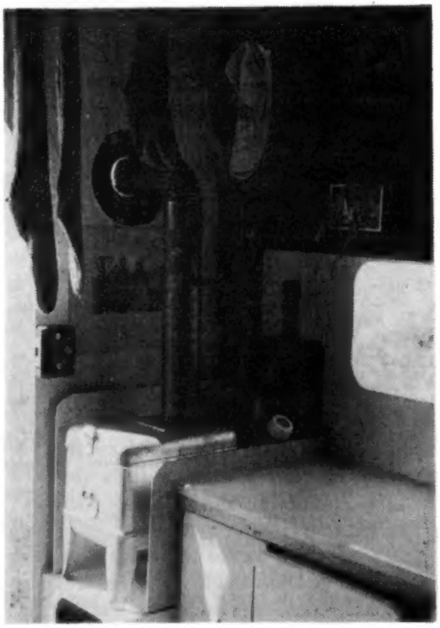
And **then** there's the point where you let go of the interest of the road and concentrate your energies forward, watching the road, pushing, driving, wondering about your own home details, after so many times of being concerned with others' details. Being involved intensely but always temporarily, with others' lives — familiar and a **part** of your life, but **not** your life.

Sharing what you have learned and
receiving from them.

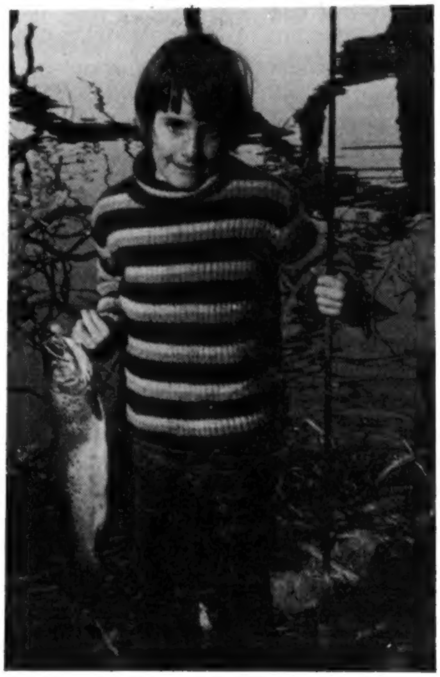
Homewards, Onwards.
Roadhouse stops for a cup of tea,
"because it's not worth making camp".
Watching the mile posts,
The home stretch,
and up the "same" long long driveway at dusk.
Home ground
the grass higher
seventy days higher than we remembered.
We stepped out onto it
damp and green,
little black grass seeds clung to our ankles —
We were home and
it felt very quiet
and very safe.
Nowhere to go,
home,
the day gone
the stars even felt warm,
eyes travel quietly to familiar corners
pawpaws grown —
grapes ripening on the vine,
the redness of the tin roof,
no more movement
The truck's bonnet warm
Melon and cucumber and comfrey
Nev and Gwenda's faces warm in greeting
"You're home, how was it?"

"well . . .
it was —
it was a necklace of jewels."

Bothwell . . . once a servant's cottage.



The wood stove, with socks drying!



Toby's first fish, an 18-inch-long brown trout, caught at Woods Lake during a four day camp.

Birds in the balance

BY ROGER M. WEEDEN

Where do they go? Or more to the point, why do they go? Why is it that birds and animals leave their local habitats?

I don't mean because of migration. Most people realize that birds leave a certain area in winter. They go to warmer climes and better food sources. In many cases it means a long flight, sometimes one of many thousands of miles, to find the essential food and warmth.

Nor do I mean the creatures and insects that hibernate during the winter months. Once again the cold winter weather would be too much for them to stand.

No, I mean the creatures that have left our countryside. The birds and insects and wildlife that we no longer see around us.

It may seem to be just an author's romantic word picture that illustrates a housewife happily gazing out of her kitchen window, watching the birds dancing and playing on the lawns. Whether it is or not, housewives still gaze out of windows, but the birds no longer seem to want to dance and play. In many places the birds seem to have disappeared altogether.

Why have they gone? I believe that there can be only two answers (1) They have left of their own free will; (2) they have been forced to leave.

Whichever it is, they are missed by animals and humans alike.

Walk around any suburban housing estate. How many people erect bird houses and hang up tit-bits to attract our feathered friends back to suburbia?

Why is it that the birds will not return? Think of it this way. Creatures only live where there is food enough for them to eat. Once that dries up, they will leave.

Nature, after all, is only a set of finely-balanced laws. If one of these is broken, then the pattern is altered. Suppose one species of animal is exterminated, what will happen?

First of all we have to realize that one bird or animal is only a link in nature's chain. The fly, for example, is part of the spider's food supply. If the spider was completely wiped out, then the fly would increase in vast, unchecked numbers. The birds that live on spiders would also suffer. Thus the whole chain of life would be affected.

These laws, that were worked out long before man made his feeble attempts, have worked for thousands of years. They have operated successfully until recent years, when man has got the idea that he can upset the balance of nature with no ill effect. This idea is a misconception, and one that we are paying dearly for.

Let's take a look at the world in miniature. Most people have a garden. In that small area of cultivated (or uncultivated) land all of the basic ideas of life are worked out. Love, domination, comedy, death. They are all there.

But upset the balance, remove all of the insect life and what happens? As soon as the food supply dries up, the birds and other animals leave the area. The soil suffers — and so, incidentally, does mankind.

How do we upset this fine balance?

Man thinks that he is helping himself by dusting and spraying the world with tons of poison. He tries to assist the growth of plants by exterminating the animal and insect population. But this doesn't work. In fact it does more harm than good.

Why? Because insects were created for a purpose. That purpose is, as I have said, to form a link in nature's chain.

What we have to learn is that insects and birds can be used to our advantage. By encouraging them back into our gardens and properties we will produce better and more natural foods. Instead of spraying or dusting with poisons, why don't we use natural sprays? Things that would turn nature in our favour? We can, in fact, help each other do a better job, because man and nature can and should work hand in hand.

When mankind learns how to use nature to his advantage, he will have learned something of great value. Indeed he will have become wise. After all, wisdom is only knowing how to use knowledge.

But you ask, how do we encourage these natural aids back to our garden?

The answer is simple. Stop using pesticides that are man-made. It will take some time for your garden to become free from any trace of them. But by using natural fertilizers and sprays, the soil will eventually clear.

Men rush about protesting about the dropping of powerful atomic bombs. They jump on the ecological 'band-wagon' for something to do. People scream at the amount of pollution that is being dumped into our rivers and oceans. But no one is really trying to stop it.

There are small groups of people who are concerned. But those in positions of power are not really interested. While they make all manner of excuses, the main reason remains the same. It is not the ecology that men worry about. It is the economy, and the economy of their pockets at that. Money is the god that reigns supreme. It controls and it destroys.

When we learn to rid ourselves of the pollution of money we will be well on the way to solving the rest of the ecological problems.

Then, who knows, the birds may even return to our gardens.

Harvey Park memories

By V. E. FLETCHER

I was born at Harvey Park homestead, east of Peak Hill, New South Wales, in June 1895. They were the days of the "axe-happy" pioneers, my father included. I remember the area well. There was a lot of open forest land and a great deal of native cypress.

There was a great population of birds: eagles, eaglehawks, magpies, kookaburras as well as emus. I remember my grandfather Fred Beasley, owner of Harvey Park, talking to my father about the increase in grasshoppers (locusts), but I also noticed a great influx of eaglehawks, which avidly fed on the locusts.

The locusts did not make much impact on the grass. I returned in 1940 to have a look at the old place; a vast area cleared of trees. Many of the birds had migrated to the mountain areas or had died out.

During the 1920s great areas of Mallee were cleared for wheat and no windbreaks left. The mallee fowl has also disappeared from those areas which are now the hatching ground for plague proportions of locusts; and still no windbreaks being planted to encourage bird life, the predators of the locust.

The present graziers can blame their great-grandfathers for the plague locusts, but as soon as they get their fat wool cheques they rush off to the Gold Coast or Paris and have to raise overdrafts to pay their taxes, but nothing goes back to restore the bush.

Grandfather Beasley was the first to grow wheat in the Peak Hill district, bringing the wheat seed by dray when he and his family moved from Corowa.

In 1886 the house at Harvey Park was built of pise. It is still as sound as when it was built — that is, it was when I last saw it about eight years ago.

About 10 or 12 years ago we bought a dairy farm at Robertson, NSW, 2000 feet up and overlooking the coast. There was a half acre of apples and pears.

As we had taken possession in April, we had little time to prepare for winter feeding, let alone spray the orchard against codlin moth.

When the harvest came all the fruit was free of pest. We wondered why. Then one lovely morning I was sitting on the verandah overlooking the orchard and saw numerous small birds in the branches of the fruit trees, searching under leaves and in the forks of twigs and branches for insects.

One type of bird would start at ground level and hop up and around the trunk searching for insects; it would pull off loose bits of bark to uncover possible food. Just then a soldier bird yelled a warning and these small birds quickly vanished into a row of a large type of Berberis, sometimes called the Barberry.

These are prickly, thorny trees. Even the leaves have needle-like thorns. Behind these tall shrubs was a belt of the remnant of rain forest, all these trees giving protection to the small birds from cats and butcher birds.

During the First World War, whilst I was in France, I was billeted with French farming people and helped them on their farms, and I was intrigued by their use of all organic matter.

Their farm and domestic buildings surrounded a sunken courtyard about one metre deep. The horses had straw bedding, also the cows. All the animals were stabled for the winter. There was a cellar under the cowshed and under the horse stable. Urine drained through the floor into the cellar.

Once a week, stable and cowshed was cleaned out and dumped into the sunken courtyard and fresh straw tossed from the loft as bedding for the animals.

During June and July the compost was carted out in drays on to the fields for cultivation and only spread immediately before ploughing. Their wheat, oat and potato crops yielded hugely and nothing was attacked by pests.

During the maturing of the huge compost heap the cellars were pumped out on to the heap, much of the liquid seeped back into the cellars. Side dressings of the liquid were used on their kitchen garden plants.

I bought a poultry farm near Sydney in 1948 from a Russian who used to throw a lot of fowl manure and yard sweepings over one of the fences on to the headland of one of the small cultivation paddocks. One year I spread this 18-inch deep old manure over a quarter of this cultivation area and ploughed Sudan Grass over the whole area.

A plague of butterflies swarmed about for a while. Some time later my wife called me to the Sudan grass patch, which was four feet high, and showed me that all the leaves were stripped off the grass, which was heavily infested with caterpillars. I walked through the area and when I arrived at the part where the old fowl manure had been spread, not a leaf of the extra-well-grown grass was touched, and not a sign of any pest whatever.

I remember my father making compost heaps away back in the 1890s, and he kept the practice up until he died in 1950 at the age of 90.

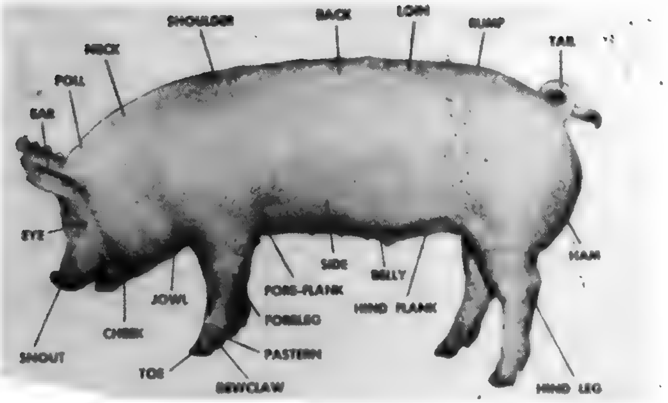
A letter in one copy of EARTH GARDEN asked how blackberries were eradicated before the hormone sprays. As Robertson was very suitable for the blackberry and as about one third of our farm was infested with blackberries, my son and I sprayed them and in mid-winter, when the old vines were dry and brittle, we drove over them with the tractor, dragging a pasture harrow which broke up the old vines, leaving a mulch on the ground surface which allowed grasses to germinate.

I asked the old hands what they did to eradicate blackberries before the sprays and they said the whole family waded into them with brush hooks and mattocks.

Another item came to my notice today. My wife found several of her potted plants dead or dying.

Her remark was — "You know, these synthetic flower pots are reputed to kill some plants, that is there are many plants sensitive to synthetic flower pots!" I then asked her why she didn't get some terra cotta or earthenware ones? She replied that they were now unobtainable. I then thought of the Earth People who are potters . . . a new line for them!

About Pigs...



BY J. M. FITZPATRICK

A project that can be quickly established has enormous value for the morale of the new homesteader.

He has probably had a pretty traumatic time taking the plunge and a project that does not require a big outlay of money or time is well worth consideration.

Most everyone says: get the garden established first. What I say is: get the pig pen built.

Chairman Mao, on complimenting the pig as a producer of fertilizer, should also have added that he is the cheapest source of home-grown meat.

Select a spot for the pen preferably on a slope facing north. Ideally, morning sun and afternoon shade is the best set-up.

The shed doesn't have to be fancy. A small water tank cut in half will do fine. The most important thing is to ensure a dry bed for sleeping. Pigs will readily withstand severe cold and wet provided they "sleep dry".

I always give my little pigs dry bracken, blady grass, etc, for them to snuggle down into on frosty nights. One can buy special pig wire, but a cheap and effective fence can be made from old iron-frame bed-bases. Pigs don't jump, but they do burrow. So staple your wire to some solid saplings.

Next to acquire your pig. Better still, get two pigs. They do better with company and two are no more trouble than one. For some time now Government regulations in New South Wales have forbidden the resale of pigs at public stock sales unless for immediate slaughter.

So you will have to buy your pigs privately. All you should pay for a weaner pig is $10. For this price he should be about eight weeks' old, "cut" and eating solid food. He should also have been wormed.

Check with the breeder as to what he is feeding them. The most important thing to remember about little pigs is not to change their food suddenly. Some pig people are very helpful and if they are feeding them pellets will give you enough for a few feeds until you get them changed over. In any event, underfeed rather than overfeed for a few days.

Pig pellets and meatmeal are out if you want to feed your pigs economically. Wheatmeal, at about five cents a pound, is about the cheapest meal currently.

The first essential is a pig saucepan. In this you should boil up all your potato, vegetable and other peelings and scraps. Don't forget to add eggshells and a little salt.

Pigs love grass but are omnivorous and need a fairly high protein content in their food if they are to grow steadily. If you haven't a cow, then skim-milk powder bought in bulk at about 21 cents per pound is the cheapest source of protein. One pound rehydrates to give eight pints of milk.

I get corn waste from a local factory producing breakfast cereal for $1 a corn sack.

In calculating the amount of feed required, a rough guide is to allow one pound meal per twenty pound live-weight of pig each day. This amount will naturally be reduced in proportion to the amount of cooked vegetable scraps, bread and so on that you have. Make their feed up like porridge. A good rule of thumb is that they should finish their feed in ten to fifteen minutes.

Pigs, particularly when they are small, can't eat vegetable fibre uncooked. Feed them twice a day, with some grass at midday. Also see they have water, particularly during summer.

Useful troughs for feeding may be made from a motor car tyre, by cutting it in half through the middle of the tread. An occasional scalding with boiling water in addition to routine cleansing will keep the troughs clean and hygienic.

Pigs are not as dirty as many people think and always dung in a corner away from their feeding trough.

To be honest, your compost heap will suffer initially if you have a pig. But then you will have the added bonus of the manure. When each pair of pigs vacate the pen, take off the top few inches of soil. This goes on the compost heap and helps to keep the pen free of worms.

We kill one of our pigs at about six months for fresh meat and keep the other one a few more months for bacon. Don't let your pigs get too fat — especially the baconer. Ideally, corn is the best feed to "finish off" your baconer.

Pigs are intelligent, sociable animals. So talk to your pigs.

If you are living in the coastal area of NSW remember that dog ticks can be a problem, particularly on little pigs. On the whole, pigs are very hardy and suffer few ailments if they are from sound stock and correctly fed.

The Department of Agriculture in your State can supply pamphlets on pig keeping and will always help with any problems.

bees, goats & ¾-acre

WARREN & KAY EARL

We were most interested to read of John Fielder's life at Clohesy River up here in North Queensland, and it's great to see how his ideas are proving a success for him.

Perhaps you and your readers would be interested to hear of our story of living in the North, but under entirely different circumstances, and of how — in this age of rising food and living costs — one can manage to live a good healthy life, no matter where you live, how low your income is, or how much land you have.

Our dream is to eventually get about 10-15 acres of land up here too. But, until then, we have to be content and make do with what we have, which is only ¾-acre and is situated on the outskirts of a small sugar town, seven miles south of Cairns.

We haven't all our area under full production as yet, only about half of it, so you see much can be done on even less than we have. Please don't think we're telling you this for any other reason except that by our own experience others who are forced to live in town areas may gain some encouragement to utilise what resources they now have instead of waiting for something better.

When we bought the blocks four years ago, they cost us a mere $600 for the two, because we were prepared to clear the debris — we soon found it had been used as a dumping place for piles of stones, glass, rusty tins etc. We also had to clear most of the trees to give us space for a house, and, being lacto-vegetarians, to grow as much as possible of our food, and to keep goats.

The street then was only gravel, but that was what we wanted — no problems (we thought) of anyone else wanting to build too near us, up "that dusty road".

There were, however, a few older type homes close by, but as our blocks back onto the school reserve, which is seldom used, and each block is a triangle joining at the widest section on the corner of our street and a lane, the threat of new neighbours wasn't a great worry.

However, in the past 18 months the street has been covered with bitumen and other houses built (although none can be within 200 yards of us). The cost of land has risen to $4000 and upwards and, of course, the rates have jumped by 300 per cent.

We were most fortunate that we both had jobs and were able to get over the initial setbacks of rising costs and to have our home built. It is a modest dwelling, with just the bare essentials.

We moved in twelve months ago. Since then we've managed to brick in the weather side and cement underneath and have done up second-hand furniture which we've put to good use. There's still much to be done house-wise, but mainly we've concentrated on getting the land into production.

It took two steady years of coming out from Cairns after work at least four times a week, and every weekend, to get the land in decent working order. Six months before we eventually shifted out we planted a hedge of 40 mulberry trees and half a dozen citrus trees.

These are now just starting to come into fruit, but it will probably be another year before we can reap worthwhile crops. We've since planted about six more citrus trees, as well as bananas, pawpaws (now bearing), an avocado tree, breadfruit, and a few passionfruit and choko vines.

Our vegetable garden, which is quite large, was started as soon after this year's Wet season as possible. In fact about six weeks before anyone else. During midsummer, vege gardens here in the north are just about non-existent. Then we have the Wet, which rots all close vegetation.

Due to the heavy clay soil here we bought in a load of black sand and carted out the remains of our Cairns compost heap to break down the soil. This was quite a lot of hard work . . . but so worthwhile.

Bambi on the woodheap.

In winter we were able to grow all sorts of beans, lettuce, Chinese cabbage, silver beet, beetroot, shallots, carrots, tomatoes, capsicums and rosellas. Plenty for us, and enough left over to give friends and to use as barter for oranges and lemons from our workmates.

Rather than use our produce to make profit moneywise, we're trying wherever possible to use the barter system — to our benefit and the benefit of others. There's also a great sense of achievement when you can look at the exchange produce and know that you were able to get it not by budgeting, but by the actual gain of your own hard work in the garden. You're also helping someone else get that same feeling of satisfaction.

Now that summer is once again on us, with the threat of an unproductive Wet soon, we're busy growing as many beans as possible and snap-freezing them, cutting and drying herbs for storage, storing beetroot and sun-drying bananas.

Warren has found a strain of tomatoes which we hope to be able to grow in summer and in the Wet. It's Yates "Epoch-dwarf", said to be "ideal for balconies, terraces or garden".

So far they're coming along nicely, with plenty of flowers. They don't grow very tall and we'll be able to place them in pots on the verandah to ensure an all-year-round supply. They are rather an attractive little bush too!

We've already had quite a deal of rain this last week, and as a result we've been able to pick about 4 lbs of mushrooms from the school reserve, much to our delight! So when the Wet is in full swing we hope to have this compensation again. In other town areas there must surely be a place such as a park or common where mushrooms spring up after the rain and therefore so many free feeds to be had. Early rising is essential to beat the old hands.

(For safety, consult Dick Burton's guide to mushroom foraging in EG7.)

Today, Warren pulled up the ½-lb of shallots we planted three months ago and he found that he's now got 3¼lb to dry and have ready for next year.

In all we find we are able to live on less than $18 a week for food and household cleaning expenses.

As we have no fowls of our own for eggs, we've found a really great source nearby. These people supply certain shops in Cairns too, so we're not the only fortunate ones able to have these beautiful tasting eggs. These fowls are fed on a special soy bean mix, very high in protein, and not the usual meat mix mass-produced fowls are given. They also have more running space, thus eliminating so many of the dreadful diseases and psychological hangups that those fowls living in high density have.

We now have our hive of bees — all for the 50 cents cost of an ad in the local paper. We were prepared to pay $25 for one, but one chap contacted us who had a couple of hives, and another hive had swarmed into an apple box. So all we had to do was to go and collect it.

Someone else heard that we had a swarm of bees, but no hive, and knew a "friend of a friend" who used to have lots of hives but had not bothered too much since he was getting older. He gave us two hives, about 30 frames, a fine brush and other gear, lots of literature, plenty of advice and we were set.

And of course with the EG4 bee articles we're now feeling a lot more confident, and even managed to get them all back into the hive one day last week when it was extremely hot and they'd swarmed. We now have them in a much shadier position and have learned the trick of a damp bag across the top of the hive in the middle of the day. There's lots of learning ahead yet, though!

We acquired our first goat just over two years ago. Bambi was four years old then and already established in manners and character. She really won us over. Although we were renting a house in Cairns at the time, with neighbours only about 20 feet away on either side, we had no trouble having her there and had full permission of the city council.

She was happy in a clean, rough hut. When the time came to shift out here we applied to register her with the shire council. Never did we expect to go through all we did. Naturally, we had to get a permit to build her shelter, which is 9 x 12 ft, with sloping cement floor and is lined with second-hand ply.

We had intended doing this all along, but could never have foreseen the objections the authorities thought up. We'd comply with one lot of their requests, then have to face another. Bambi was in kid at the time, so — "Why do you want two goats?" "Do you have a child in need of goat's milk?" etc, etc. They even stated in one letter that architecturally designed plans were required. Imagine!

In all, six letters passed between us and the council and the matter went before three council meetings. At one stage, when our house was three-quarters finished, we almost sold up and headed back to New Zealand (where we had lived for two years) taking our dog and goats with us.

Eventually, after about three months of getting nowhere, we went in and faced the Clerk and had quite a showdown, and won. We can only have two goats per block, so had to find a home for Bambi's first kid, which was a billy. But since then she's had a darling nanny — Creature.

So besides keeping the grass down around the area, and supplying us with milk and yoghurt, goats give so much joy. So please, town dwellers, don't let the authorities wear you down. The same people who think they know best will turn a blind eye to foul-smelling dumps, dirty domestic fowl pens, air polluting factories and the horrifying conditions that some humans are allowed to live under in the cities.

Once a week we bake our own bread (two loaves) which are rich in wholemeal flours, whole grains and honey. They cost us about 50 cents for the two loaves, but give us so much more in good health.

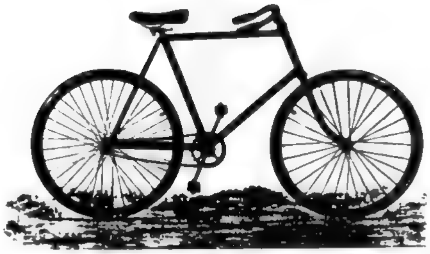
I was able to stop work in Cairns because, after eight years, we're at last going to have a baby in a few week's time. And speaking of how much good health we're enjoying, as well as money saved: as I come from a family of women who had all experienced nearly all the usual pregnancy worries, such as morning sickness, bad legs, constipation, cramps etc, we are happy to say that up till now and with such a short time left, my pregnancy has been a healthy, happy one, due to our earthloving existence.

If by setting down our experiences on paper, here in this small town, where what can be done is only limited, we can help someone else to get as much satisfaction out of life as we have, we'll be happy.

Our best to all, town and bush dwellers alike.

Warren and Kay Earl, Edmonton, North Queensland.

Warren with our dog Chyew, Bambi (at back) and her little Billy, Simon. One of the 'new' houses across the way.



BY MICHAEL NEKVAPIL

Have had you in mind many times, though thought it more apt to write when there was something to write about. Presently Cheryl and I are working on a large dairy farm — interesting alone, though not our line.

We've seen parts of all the Western European countries, and one thing is consistent — vegetable gardens everywhere; by the houses, allotments, along railway lines, in fields. Incredible space utilization, and us all the time thinking of most Australian gardens — nice ¼-inch high lawns and some flowers. Have they no idea of the alternative, at least as a money saver, let alone a source of joy?

August was spent in a small wooden chalet in the high Swiss Alps. Apart from a garden sown in May, a good deal of our food came from the wild. Before I came here "foraging" was a myth to me, but I've now been part of it and only wish to ask if you've mentioned this art in your paper. In one extreme environment type we had four herbs, at least half a dozen salad greens, as many soup/vegetable greens, as many teas and delicious strawberries, raspberries and blue-berries in abundance. And mushrooms. And in October we made delicious mild rosehip jam from the freshly ripe fruits.

Euell Gibbons is a foraging master and has written some books, notably "Stalking the Wild Asparagus"; a wizard man of the wild, though then still not turned on to whole foods.

Just on the travelling side; we spent June and July bicycling through Yugoslavia and Greece. For people with the time (who hasn't? why not?) bicycling must be one of the most satisfying ways of travelling — cheap to start with. We got to know our North American and Swiss friends riding with us.

We got to know the people of each country quite well — they seemed pleased to see us journeying so slowly, not just another car. Whatever, we received so much hospitality, from food to chats to shelter when raining. We could go where we pleased and when. Smell, hear and see everything, and taste all the local delicacies (shopping at markets is a must — there you get only the seasonal fruit and vegetables, **fresh,** possibly organic). Greek red, juicy tomatoes were 4 cents a lb.

And it's beautiful to travel so light, to understand what's necessary, what is dead weight. We cooked one meal a day — all in the pot, vegetables and beans; and salads. It would be nice for people to know that it's possible and beautiful to travel this way. We hope to repeat this in the British Isles, along with some organic farm work.

All the best with EARTH GARDEN. Hope this adds a share of energy.

Michael & Cheryl, St Anton am Arlberg, Tyrol, Osterreich (Austria).

CUMBUNGI HATS

By TONY WEDD

Cumbungi is the blackfeller's name for bullrushes.

We cut the plants when they are green, and get about six leaves in each. These we separate, and cut away the sappy white bit at the bottom of the tougher, outer leaves.

The result is a ribbon about three feet long, which we plait in strips and stitch together on the sewing machine. They make good sunhats as shown here. One day we'll try bread baskets, or waste paper baskets.

We use a four-strand plait, which girls with pigtails may find peculiar at first. Once the idea is familiar, a wider plait of six strands would be okay for a cylindrical shape like the side of a waste paper basket with a wooden base.

We work with fresh-cut leaves. Maybe they'd keep in water like that for a week if necessary. As they dry out, ending up a straw colour, they tend to shrink a little, so work to generous dimensions and weave up tightly.

You could run flat strips of the plait through the sewing machine and make table mats. We start with a small mat at the centre when making hats, where curvature would be awkward. Working with this mat in the left hand, and a plait in the right, push the workpiece in as you feed, and pull back on the plait. This will make a bowl; or the crown of the hat.

Then, to splay out the lip of the bowl, or the brim of the hat, pull back with the left hand, and feed forward on the plait. A dining knife in the right hand helps to pack it down under the sewing foot.

It takes a little practice to get the process working smoothly. I made my second and third hats together in less time than I took over the first.

As the sunhat is stitched inside up, a thick coloured wool could be wound on the shuttle bobbin for decorative effect. Stitch round the outer edge of the brim at the last, and set it right way up on a flat area to dry. Where the stitching is sound, you can trim away any ragged edges.

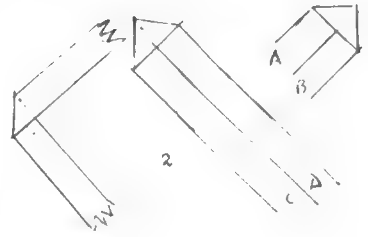
A leather band can be sewn inside the crown for a snug fit, and a green fabric handsewn inside makes it really professional.

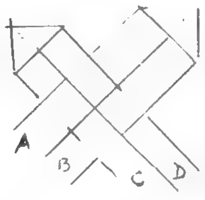
So get weaving, you mad hatters!

FOUR STRAND PLAIT

Fold two leaves across at right angles, and fold each one back along itself to make two "hairpins".

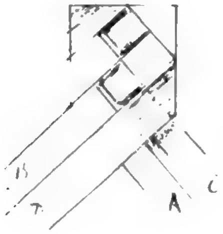
Interlace these two, like this, sliding A under D and over C, and B over D and under C.

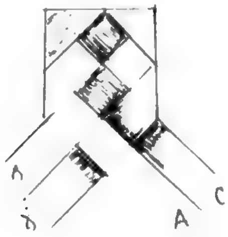




Pull tightly together, and fold A under at right angles, bringing D over C at right angles.

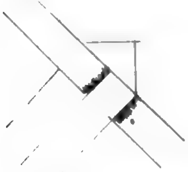
Then slide D under A. Repeat, turning B under and bringing C over, with C sliding under B as they cross . . . and so on.



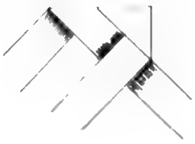


six-strand

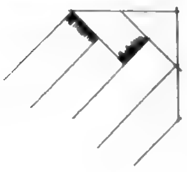
1. Start with a hairpin, and insert a leaf under the right-hand strand.



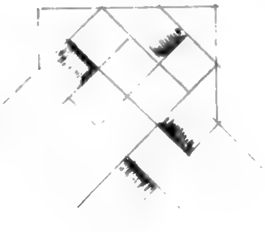
2. Fold its top half under . . .



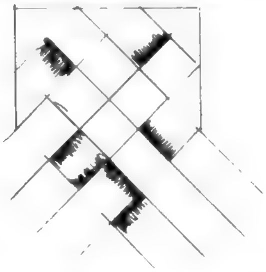
3. Bottom half over.



4. Interlace a second hairpin.



5. Fold top left leaf under, bringing it up over the centre strand of the remaining three, and under again.



6. Continue indefinitely as follows: Fold top left leaf under, bringing it up over bottom left leaf. Fold top right leaf over, taking it under the central strand only of the remaining three.

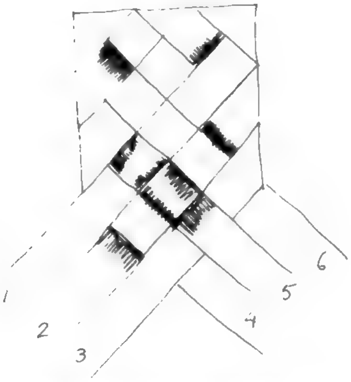
7. Extend each leaf as it runs out by plaiting two together for at least two folds, and concealing the butt ends under the fold.

Starting with a six-strand plait.

spiral

1. Complete a square of six strand plaiting, up to the first two stages in stage six.

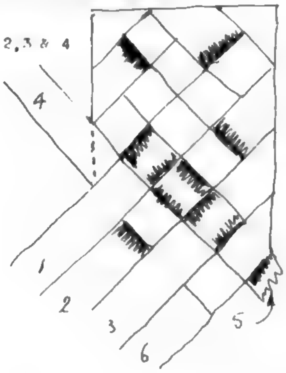
The six strands are numbered from the top left.



2. Fold six over five and four.

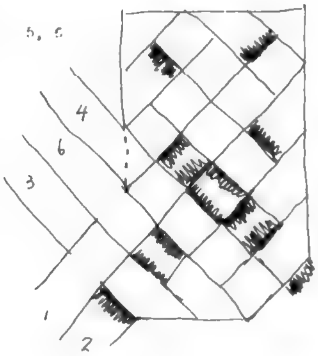
3. Bend four up backwards, doubling it back upon itself and enfolding six . . . passing it under three, over two and under one for the second time.

4. Cut off strand five.

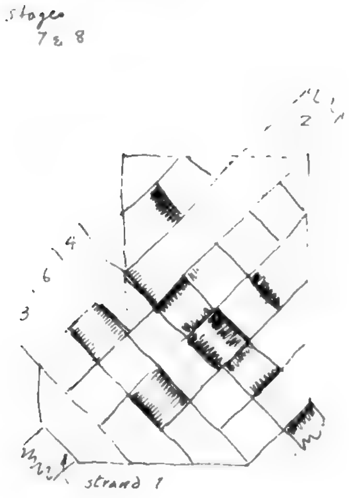


5. Fold six over three, under two and over one, parallel to four.

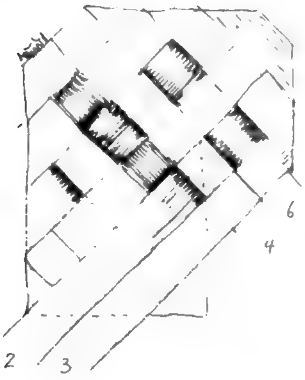
6. Fold three over two and under one.



7. Fold two over one, and fold again down under three, over six and under four.
8. Cut off strand one.



9. Fold three down under six and up over four.
10. Turn the workpiece round and continue a four strand plait for about one yard, pardon ... one metre, by bringing two over three. Then take six under four and over two.



11. Put under the foot of a sewing machine and stitch the plait down over the sharp corners of the six plait centre. These can be trimmed off later. Then continue to stitch a spiral.
12. Instructions for shaping this spiral into a hat or bowl are given in the text.

Tony also did the drawings.

The Bushman's incense & gargle

For every kind of wound made, father used eucalyptus leaves as taught by the blacks. Leaves were bound over blisters, burns, or scalds, and when in 1880 one of my brothers had his thumb nearly severed by an axe-cut, leaves bound on made such a good job of the healing, that, though father had had to put in seven stitches, when a surgeon at last saw the hand he asked who had been the doctor, as he said no doctor could have done better.
MARY GILMOUR, More Recollections, 1935.

Eucalyptus oil was the liniment, gargle, incense, perfume and fumigant of the Australian bushman in the early days. It was used to repel moths and silverfish in wardrobes and (in minute quantities) for sweets.

Mr O. W. (Bill) Hartland runs a still which has been producing a high-grade medicinal quality encalyptus oil for more than 80 years. The Hartland Eucalyptus Factory and Historic Farm, 14 miles from Bendigo, Victoria, is open to visitors every day from 10.30 to 4.30.

There you can see the 30-foot-long horizontal Cornish boiler and the eucalyptus still, as well as pioneer farm equipment such as a horse-driven chaff-cutter, horse wagons and drays and steam winches, cranes and a hammer. The museum section also has a gold mine shaft and windlass and the original pioneer cottage with all its furniture.

In 1890 Matthew Jesse Hodgson and Albert Arthur Hartland started the factory and the same block of land has been producing ever since. This is because no trees are cut down to make the oil. Instead leaves are harvested from regrowth suckers.

You can buy a bottle (or even a gallon) of eucalyptus oil at Hartland's Eucalyptus Factory. To get there you drive north from Bendigo's Alexandra Fountain along the Midlands Highway towards Echuca. Turn left 100 yards past the Victoria Hotel, Huntly along Neilborough Road and you're on your way. The roads are rough, but it's worth the trip.

EUCALYPTUS CANDLES

By Ray Tyrer

Melt parrafin wax in old kettle or teapot. To every pint of melted wax add one or two desertspoons of eucalyptus oil (more if you wish). Pour into clean beer or wine bottle about half-full.

Allow to cool and harden overnight. Then smash the bottle with a hammer, remove solid wax, and brush to remove minute particles of glass. Because of wax shrinkage, there will be a cone-shaped hollow in the top of the candle.

Poke down a length of standard candlewick with a screwdriver, and top up with more wax and oil mix. Allow to harden again (takes about half an hour on a cool day).

One of these aromatic candles burning in a room will help repel mosquitoes and blowflies. They no likee! The eucalyptus oil is released as the burning wick melts the wax. Makes the room smell beaut too!

EUCALYPTUS WASHING FLUID

(Courtesy Hartland Eucalyptus)

Put into a bottle: one small packet of Lux flakes (or half a packet), half a cup of methylated spirits. Leave overnight, then add one tablespoon of eucalyptus. Cork well, then the flakes will remain visible, as they do not dissolve.

FOR WASHING MACHINES

Just add one tablespoon of the mixture for every two gallons of water. Excellent for greasy overalls, etc.

BY DI MERCER

"Great trees from little acorns grow", runs the well known cliche.

It sounds very simple, but there are some pitfalls on the way to achieving this, as I found out when I set out to grow seedling trees to plant at Crystal Hill.

The first time I tried, I reared eight trees from ¼-oz of seed.

The second try, I bought 3 oz of seed and ended up with over 500 little saplings!

These were both varieties of eucalyptus — a tree which every dinkum Aussie should know how to grow.

This is how I went about it the second time:

First make up a soil mixture consisting of two parts of bush sand and leafmould, two parts of good fine black soil and one part of old cow manure. Rub the lot through a sieve — I made one from canary wire nailed onto a frame of 2 x 2 ins wood.

The best way to mix it is to sieve it onto a square of plastic and then take each corner in turn and tip the mixture about on the plastic until it is well combined.

Now get fruit cases, or make up boxes 4 inches deep and about 18 x 20 inches. Put in a one-inch layer of rubble and put the soil into the box to within one inch of the top.

Pat the soil smooth, scatter the seed over it and cover with a thin layer of bush sand . . . just enough to cover the seeds and no more.

Water, with a fine spray, until the soil is moist, but not soggy. Cover the boxes with a pane of glass and leave them alone for a week. Check at the end of a week to see if the boxes have dried out.

The seeds will germinate in about two weeks. When they start to come up, lift the glass so that a little air circulates across the box. Be sure to keep the soil moist. Don't over-water.

When the plants are between one and two inches high plant them, in the same soil mixture, in four inch pots.

Keep the pots on wooden boards raised from the ground with a brick at each end, in a sheltered position. Again keep them moist but not overwatered.

When they are one foot high, transplant them into large containers. Old two gallon plastic buckets, with holes punched in the bottom, are suitable, or 7 lb fruit tins, or half oil drums or kerosine tins.

This time double the amount of soil in your potting mixture — that is four of soil, two of sand and two of cow manure or humus.

The trees are ready to plant out when they are 2ft 6ins to 3 feet high.

They should be given shelter from the wind for the first year. A plastic fertilizer bag put round three stakes is quite effective. Or you can use cement bag or sacking.

The tree should also have a stake (hammered in when the hole is dug), to which it is tied with a piece of rag or soft rope. Tie the rag tightly round the stake, but loosely round the tree to allow for growth.

I planted seed in November and some trees were ready to plant out in six months. Most of them are ready now at a year old.

I got my eucalypt seed from Nindethana Seed Service (G. W. Althofer), of PO Box 129, Wellington, NSW, 2820. Their nursery is at Dripstone and they supply a free, roneoed catalogue (send a 7 cent stamp).

all in harmony

BY MARJORIE SPEAR

Marjorie Spear has a four acre organic orchard at Kuranda in North Queensland. She calls her tropical oasis Harmony Farm.

Mrs Spear, a South African barrister, gave up her law books in 1945 to become a farmer. She moved with her family to Nelson, New Zealand, in 1960.

In 1968 she and her husband Philip, a retired engineer, moved to Kuranda, 18 miles from Cairns. An overgrown wilderness, impoverished soil and an old school bus for a dwelling were the only "assets".

Marjorie longed to start planting, but the Barron River was too far away for much watering with buckets. Electricity was installed a few months later and a pump then provided ample water for growing.

Official soil analysis diagnosed a soil deficient in nearly everything and pronounced it impossible to grow pawpaws, bananas and other tropical fruit.

However, within 15 months the Spear family were enjoying their own planted fruit. In her article Marjorie Spear tells us how this was done.

We built up the impoverished soil here with all possible cheap and free organic materials, using our car and a small trailer.

It was hard work, loading chicken, pig and horse manure, grass cut on road verges, peanut hulls, sawdust and so on. My first compost heap was made from sawdust and chicken manure (sawdust needs nitrogen added to make compost).

My first vegetables were shocking! They were eaten by every conceivable tropical insect. Why? Because the soil was poor and insects love unhealthy plants. The second year we did enjoy some vegetables ourselves. Since then my vegies have become progressively healthier and tastier. Healthy plants do not attract harmful insects.

We use no poisonous sprays and never have. The answer is patience. The soil must be nourished with organic matter and the plants will then be healthy and flourish. We will always have harmful insects as tropical scrub is all around us and is the home of these insects.

I find seaweed spray helpful in maintaining plant health. I also use garlic spray sometimes and a dusting of derris on my cabbages before the dew evaporates. My advice to beginners is: don't be despondent. Work hard, build up your soil, and love your plants.

At Harmony Farm I have tried to create a happy home for all my plants. I grow vegetables for my family and my friends, but my main interest is trees. I have planted and cared for nearly 300 trees and shrubs.

Already, macadamia nuts, jak fruit, soursop, peaches, five corners, citrus and mulberries are bearing fruit. Many other fruits will enrich our diet in future years. Flowering trees, shrubs and climbers provide glorious colour throughout the orchard and garden.

Birds and butterflies have joined us. They add to the beauty and help us by eating insect pests and enjoy the nectar from the ornamental trees. We think the plants enjoy the bird song and the fabulous butterflies (just as we do). The birds also eat "our" fruit, but they always leave us a share!

The "little people" (fairies) are a tremendous help. They like to live in organic gardens where humans acknowledge their existence and appreciate their work. Harmony Farm owes a great debt to this wonderful band of nature spirits. They have guided my labours. I cannot see them, but I am sure it has only been through their knowledge that I have been inspired to garden successfully in this difficult, though lovely, tropical climate. To me it is important to work by myself so that I can be in constant communication with the nature spirits and

Marjorie Spear with bananas.

my plants.

I am a peasant farmer, making a very small income by selling a few paw-paws and bananas. Thrift is the essentail ingredient. We waste nothing and put into the soil everything except plastics and glass.

My initial capital was spent having the house built. To start I bought a few fruit trees, but most have been grown from cuttings, suckers and seeds given me by friends — a slow but cheap method.

It is advisable to harvest and plant your own seeds or exchange them with other organic gardeners. Buying seeds is expensive and bought seeds are treated with harmful chemicals.

We never drive anywhere without returning home with some organic matter for the orchard. We have changed our car for a utility and combine shopping with collecting free manures. Mulching can be hard work but saves us money because well-mulched soil does not need watering often.

Kuranda is 1000 feet above sea level and from 1900, Harmony Farm grew coffee and pastures till the soil became exhausted. My land is very sloping, so when I arrived I had it contoured so that I could build up topsoil which would not then be washed away by our very heavy monsoon rains.

Mr P. A. Yeomans' Keyline methods are recommended when planting up new areas, especially in dry regions.

Companion planting has helped: some plants will not grow happily alongside others, and some plants help keep away insect pests from their neighbours. Compatible plants thrive. I believe plants, like people, grow well when happy — so avoid monoculture and an institutional atmosphere.

Round the house I grow some flowers for their perfume and beauty, and in the flower beds I plant vegetables which benefit from shade provided by the flowers. When the vegetables are watered the flowers get their share at no extra cost.

During the hot, sunny weather I plant my seed beds around trees. (This shade is cheaper than buying Sarlon cloth.) Lettuces also enjoy shade from banana trees, being shallow-rooted; but give them plenty of compost.

Not everything I have planted was suited to our heavy soil and climate: some trees have died, and I have learned which trees and plants should grow and thrive. Experience has taught me not to grow plants unsuitable for Harmony conditions.

Herbs are important. They are health-giving to humans, plants and soil. I recommend in the tropics parsley, mint, garlic, chives, basil, Russian comfrey and nasturtiums. They all need good soil, good drainage, some shade, and TLC (tender loving care).

The Book of Herbs, by Dorothy Hall (Angus & Robertson) is recommended for Australian readers, and gives much valuable information on all aspects of herbs.

I do my planting by the moon, and consider it important to put the needs of my plants (water, fertility, etc) before my own convenience. Working with the soil has given me renewed vigour.

My fingers (I never wear gloves) are in contact with the earth and so are my bare feet. I can thus absorb the earth's vibrations. My feet have toughened gradually and can now withstand sensitive weed and pebbles.

Weeds grow easily and provide good composting matter. They also protect the earth from the hot sun. They should be cut down before flowering, however. Some weeds, for example, wild mustard, disinfect the soil and accelerate composting. When composting I use QR activator if sufficient weeds or comfrey are unavailable.

Free sawdust from our local timber mill is used extensively on garden paths. When decomposed I incorporate it in our heavy clay soil. Fortunately this sawdust is not treated with chemicals. Sometimes, instead of composting kitchen waste, I place it in one-foot trenches and cover it lightly with chicken manure and soil. Plants grown a few months later relish this decomposed refuse.

Wire netting protects young pawpaws from wallabies.

Chemical fertilizers are never used. However, when funds permit, I do buy rock phosphate and blood and bone. Dolomite (a natural limestone with magnesium) is used to maintain healthy alkaline balance. The soil pH was unhealthily acid when I started here. Dolomite, like lime, is cheap.

I now get immense pleasure from working with my reasonably fertile soil, which abounds in earthworms (not there five years ago). The first two years of hoeing and weeding humus-deficient soil were no joy. Digging is kept to a minimum in flower and vegetable beds — it disturbs the soil ecology.

I am a vegetarian (have been for the past ten years). I came to Kuranda so that I could live in an unpolluted atmosphere, and eat my own organically-grown fruit and vegetables (eaten mostly raw). Paw-paws, bananas and green salads are our main foods. We buy goat's milk and cheese and organically-grown wheat for home-made bread. We enjoy honey from our bees, and our own exotic fruit.

Living and eating in harmony with nature has improved our health and increased our vigour. Harmony Farm welcomes health-conscious adults who are prepared to work in the garden and orchard or to be a handyman or girl. Such visitors are given our tasty vegetarian food, largely raw.

No one may smoke at Harmony Farm as the plants and I loathe the smell. Folk coming here can learn how to garden organically, while enjoying a healthy way of life. However, I can only accommodate two people, so please do not arrive without writing or phoning beforehand (Kuranda 205).

I hope when the fruit trees are in full production that many ardent gardeners will enjoy their fruits. Harmony Farm already provides great beauty for those seeking peace and harmony.

Feedback on Fowls

By GLENEVIE JENSEN

I read with interest the articles on poultry farming, as we have always kept our own fowls, being aware of the superior quality of eggs from free-range fed birds. For what it's worth, I'll add a few tips that I feel are important.

Firstly — we have found that leaving feeders constantly with adult birds is not a good idea. This practice is quite alright until the birds are three to five months old, but after this you are asking for trouble.

Fowls are naturally greedy and will eat more than they need. They are no different from people who overeat — they fare badly in hot weather (I have seen them collapse) and are more prone to disease. Also the fatty tissue around their productive organs seems to interfere, to a large extent, with their laying. Much better to have a controlled feeding system.

To give you an idea, I have twelve cross-breds and four bantams. In the morning I soak a couple of crusts of bread (not too much more). I then squeeze out all the water I can and crumble it into nine handfuls of all mash. This is worked well in with the hands and a little extra water added, to make a barely-damp consistency.

Don't give them slop, as this can produce a skowery condition. I give this feed on corrugated bits of iron. In the afternoons they are thrown about 12 handfuls of either wheat or cracked corn (in winter) on clean ground. If I see that they have left some, I cut down accordingly on their next feed. By this system I have had Grandma hens of four years and more laying amazingly well.

Another important thing to remember in Queensland is to raise water containers high off the ground — on stumps or something similar. This prevents the old cane toad from luxuriating in the drinking water and leaving some pretty sick fowls in his wake.

The last point I feel I must mention is a mistake that many backyard poultry keepers often thoughtlessly make. This is the placing of three or four hens with one rooster. These feathered sultans need a harem of at least six to eight or more to keep their attentions evenly divided.

A drop in egg production of the hens concerned will ensue if this is ignored, not to mention the misery that is being inflicted, particularly on penned-up hens.

BY V. E. FLETCHER

My wife and I were poultry farmers outside Liverpool, NSW for 14 years and we used the deep litter principle after the first year. Deep litter is started on the earth floor (not on concrete or tar) with three inches of sawdust from the local sawmill.

Every day some wheat is scattered over the sawdust, which starts the fowls scratching for more grain, thus mixing recent droppings into the sawdust.

You never need to clean out the fowl house again. The litter will build up to about 18 inches or two feet and will be odourless and is in the right condition as a fertilizer, either dug or rotaried in. We mostly top-dressed the ground after planting seeds. The moisture is conserved in the ground and worms and bacteria do the digging.

The purpose of starting the deep litter on the ground is to enable the beneficial bacteria from the soil to work on the litter, which produces vitamins B12 and antibiotics.

Hens kept on deep litter, even when densely populated, are resistant to most diseases. When the litter from our 4000 fowls reached about two feet deep we notified the local Italian market gardeners, who readily bought it for two pounds ($4) a cubic yard, but we always insisted on them leaving about one foot of litter.

Natural Poultry Keeping, Jim Worthington, Crosby Lockwood & Son Ltd, London, 1970, 112 pp (first published 1964 as Poultry Keeping Simplified).

This book fulfills the needs of those seeking help with natural poultry raising. Jim Worthington has been a professional in Britain since the 1920s and knows what he is talking about.

"I have learnt the hard way," he says, "mistrusting on principle what is written as either hearsay or propaganda, misleading and confusing at best, positively dangerous at worst."

Poultry keeping is not an abstract science, he says. It does not require elaborate equipment and higher mathematics. Just common sense. "In my submission they (fowls) are best and most easily kept on the good earth," says Jim Worthington.

He repeatedly emphasises ad-lib feeding — fowls should be able to eat as much or as little as they like. They should be fed: 1. a grain . . . wheat is good; 2. a meat . . . fish meal or blood and bone; 3. green matter . . . leafy vegetables. Grow your own greens, feed them raw — a lettuce once a week is good.

Keep the three types of food separate, so that the fowls can choose what they need.

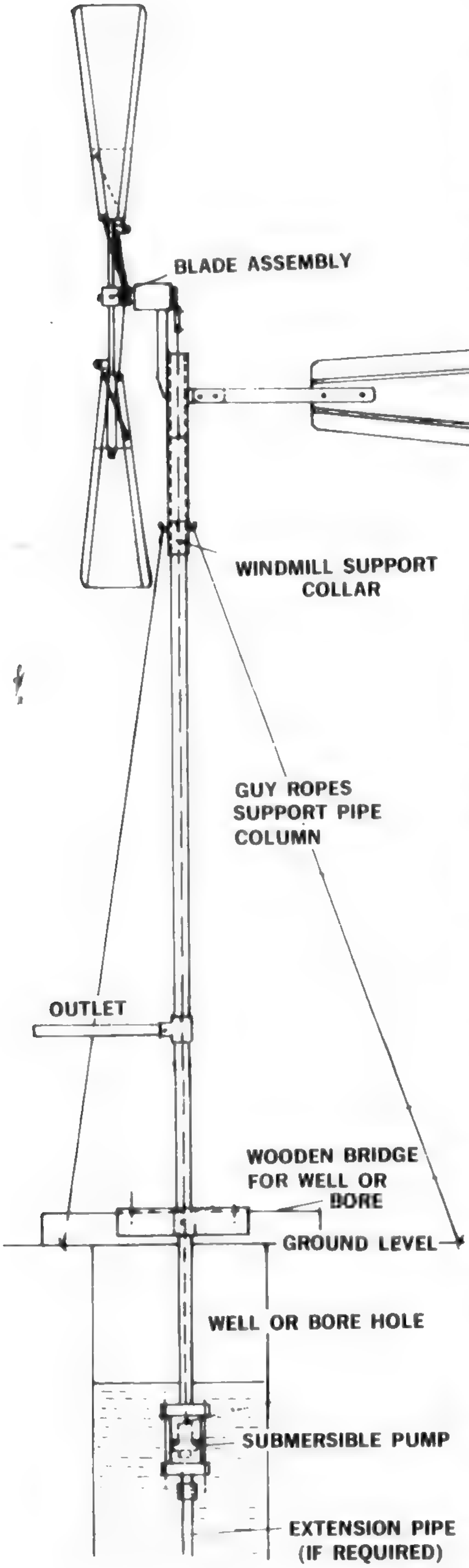
"Thou shalt not overcrowd" is the poultryman's commandment, though 25 birds can be run comfortably on an acre. One hen produces one cwt of manure per year for your garden.

Free-range poultry have natural access to sunlight, grass and insects.

Poultry Keeping, Charles E. Stacey, Foyles Handbooks, has good advice for beginners and experienced poultry-keepers and advises on free-range and intensive methods.

WINDS 2:

GYRO WIND PUMP.



The Moorhouse Gyro Wind Pump is a discovery we've made since our special feature on the winds and windpower in EARTH GARDEN No 5.

The design is unique and simple. A submersible pump is powered by a two-bladed wind wheel mounted on a length of one-inch piping, which acts both as a "tower" (supported by guy ropes) and as a delivery pipe.

The pump will deliver 500 gallons of water in 24 hours to a trough or header tank from well, bore, spring, dam or creek. This is sufficient for a holiday cottage or for watering 50 head of cattle. It will pump from depths of 12 metres upwards.

It will operate on very low wind speeds (from two knots) and is fitted with an automatic governing device which "feathers off" the blades at wind speeds of 30 miles an hour or more.

The Moorhouse Gyro Wind Pump can be easily erected and moved if necessary and can be left unattended. If an overflow pipe is let back into the bore there is no need to stop the pump at any time.

Available in kit form with all components except the pipe column. Price at time of writing: $140 FOR from the following addresses:

QUEENSLAND: Moorhouse The Machinery Man Pty Ltd, 161 Bradman Street, Acacia Ridge, 4110 (PO Box 86, Acacia Ridge).

NSW: Moorhouse The Machinery Man Pty Ltd, Bolong Road, Bomaderry, 2540 (PO Box 14, Bomaderry).

VICTORIA: Rural Mechanical Aids Pty Ltd, 7 Barrett Street, Kensington, 3031 (PO Box 77, Flemington, 3031).

TASMANIA: Eric E. Howard & Sons Pty Ltd, 177 Brisbane Street, Launceston, 7250.

NORTHERN TERRITORY: Agricultural Services, PO Box 1498, Darwin, 5794.

WESTERN AUSTRALIA: E. & M. Rosher Pty Ltd, 1742 Albany Highway, Kenwick, 6107.

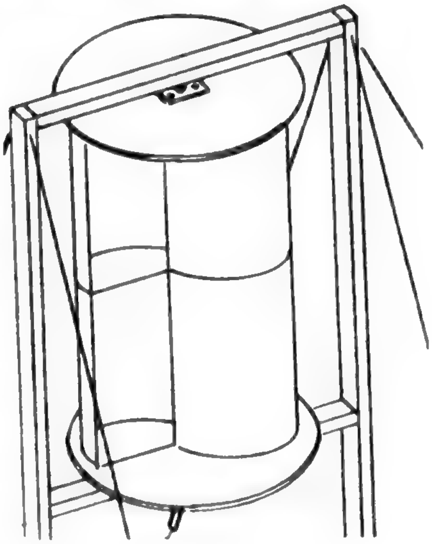
NEW ZEALAND: Aitchinson Industries Ltd, 2 Churton Street, Wanganui (PO Box 27, Wanganui).

PAPUA NEW GUINEA: Boroko Motors, PO Box 1259, Boroko, Port Moresby.

How to Construct A CHEAP WIND MACHINE FOR PUMPING WATER, Brace Research Institute, Macdonald College of McGill University, February, 1973, Ste Anne de Bellevue 800, Quebec, Canada. Do-it-Yourself Leaflet No L-5. 12 pp. Price $Can1.00, including postage.

The Savonius rotor is a vertical shaft windscoop, developed by Finnish engineer S. J. Savonius in the 1920s. With the plans in this leaflet you can build a rotor from two 45-gallon oil drums and a diaphram pump using an inner tube.

Cost on a do-it-yourself basis, including some welding, would be about $50.00. Brace tested their rotor in Barbados. Instructions are clear, drawings simple.



LAW OF THE LAND

BY DAVID JACOBS

We can't know enough about the law as it applies to our land.

In EARTH GARDEN No 7 members of The Good Company in Victoria told their personal story of how they formed a company to buy the land they wanted.

We asked law student David Jacobs to elaborate on the legal aspects of group buying of land. This is his brief outline of three possibilities.

The law is a marvellous, mysterious (and costly) creature, usually providing a variety of ways of achieving a desired result. Group buying of land is no exception to this.

Basically there are three ways to buy land as a group — as tenants in common, as a co-op and as a corporation.

Before looking more closely at this, a word of caution. Firstly, this article is meant as a broad outline only, and is directed to those who wish to buy land together. This must be distinguished from the actual running of a community, which may involve many more (or perhaps less) people than those who have actually subscribed money.

Secondly, the aims of every group will be different. Some will wish only to provide a weekend or holiday retreat away from urban life, others will want to build a whole new life style on their land.

Some groups will be permanent in their membership, others will tend to be floating. So the particular legal method used to buy the land must be designed to suit the particular needs of the group or commune.

This article can only give you preliminary guidance. I most strongly advise that once it is decided to buy the land, and membership and objectives are established, that you go to a solicitor. It may be expensive, but it is certainly worthwhile, and the cost can be shared by the group.

The first method is for the members to buy the land as tenants in common.(1) This means that the land is bought in the names of all those who provide a portion of the purchase price, and each has a share in the land in proportion to the amount he provided of the purchase price.

There are three advantages to this method. Firstly, the initial legal cost is small. The purchasers are only liable for the conveyancing costs (and solicitor's fees and stamp duty) and the purchase of the land.

Secondly, there are no legal formalities involved in the running of the land, and thirdly, if one member subsequently wants to leave, all he need do is sell his portion to either the other existing owners (or any one of them), or to a new member.

One disadvantage of this method, however, is that he will have to pay solicitor's costs, and the new purchaser will also have to pay solicitor's costs and stamp duty on the value of the portion of the land sold.

So then, in cases where there will be a small, stable membership, tenancy in common offers the most simple and inexpensive means of land buying.

The second method is to form a co-operative under the Co-operative Act of NSW (or which ever State you are in). However, this embraces not only the buying of land, but also the running of the community.

A Co-operative Society is a legal entity, comprised of a group of people banded together to provide themselves with a service. By a legal entity, we mean that the Co-operative Society can in its own name make contracts (such as the buying of land) as opposed to a tenancy in common, where the land is bought in the names of the

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(1) Joint tenancy has not been considered because, in the author's opinion, it is totally unsuited to group buying of land.

individual people.

People become members of a co-operative by buying at least five shares (which can have a nominal value, for example $1 per share, or a substantial value). If the co-operative goes bankrupt, each member is liable only for the full value of his share. The essential quality of a co-op is that its purpose is that of providing a service for the benefit of its members and not for making a profit.

To form a co-op registration under the Act is essential. The Registrar of Co-Operatives has discretion whether or not to register a group, so this is not automatic.

To be registered, the group must prove that it provides a necessary service which other co-operatives do not provide, that it has a minimum of seven members (or more), that voting is on the basis of one-man-one-vote, that dividends do not exceed 10 per cent of paid up capital, that no one member holds more than one-fifth of the shares, and, especially, that the co-operative will be a viable economic proposition.

It appears that the Registrar is extremely concerned that the co-operative has a good chance of economic success, and proof to this effect must be shown before he will register a Society.

A practical extension of forming a co-op worth investigating would be the issuing of debenture stock. Those providing the purchase money would buy the debentures and the land would be bought in the name of the co-op. Members could sell their debentures if they wished. Any person who wanted to take part in the actual community could then buy shares, perhaps giving more shares to those who have bought debentures.(2)

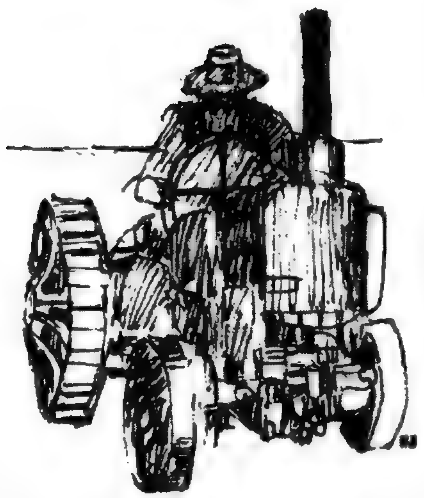
The advantages of forming a co-operative are mostly cost and ease of movement. There are no filing costs in registering a co-op, and the group can draw up all the necessary documents themselves without the need of a solicitor.

No stamp duty is payable in the issue of shares, nor in the certificate of incorporation. To enter the co-op, a person merely has to buy five shares. To leave, he returns them to the co-op.

A debenture holder can sell his debentures. This will involve negligible cost compared with the conveyancing necessary with a tenancy in common. The co-op may borrow money itself if the full purchase price of the land is not available.

Disadvantages include some formalities in running the co-op, such as the appointment of directors, the need for an annual general meeting and keeping the books. However, these are not too onerous.

To sum up, the co-operative seems an extremely good method of buying land where it is likely that membership will be changing. It enables the community to exist independently of its members and their comings and goings.(3)



The final and perhaps most time-proven method of group land buying is to form a company. Like a co-operative, a company is a legal entity. It also has inbuilt limited liability — each member is liable for the company debts only to the paid value of the shares.

The company is run by a board of directors elected by the shareholders. Conditions of shareholding can be determined by the 'founding fathers' and embodied in the articles of association (see The Good Company, EG7).

For example it can be stipulated that no person shall become a member unless the board of directors give their consent. It can also be provided in the articles that the holders of certain shares shall be entitled to exclusive use of a certain portion of the land. This is important if members wish to have homes apart from each other.

Capital would be raised by issuing sufficient shares at an adequate value to provide for the capital needs of the group. A company can also borrow money in its own right.

The company structure has many advantages. Perhaps the greatest is ease of movement. For example, if a member has bought 4,000 $1 shares and he wishes to leave, all he needs to do is to sell them to an existing member (the articles of association can provide that he must do this) or to an outside person.

If someone wants to join, the directors can issue more shares to him (provided the company has unissued shares). The company will also continue to exist irrespective of the movements of its membership.

Any conditions or other requirements that members desire may be formally embodied in the articles of association. Transfer of shares is relatively cheap. Stamp duty rates are about half those of conveyancing.

The disadvantages are twofold. Firstly, the cost of setting up a company is significant. It can range from $350 to $600. So the initial cost is high, though long-term costs will be low, being borne by members.

Procedure is the second drawback. With a company there are many duties which must be carried out by law — meetings, the keeping of books, the filing of accounts, the maintenance of a register etc. If a dispensation under s.24 NSW Company Act is obtained, many of these procedural requirements are dispensed with.

The method you choose will depend entirely on your aims and objectives. Once you have clearly established these, you can select the legal structure which best suits your group. But remember, never try to cut costs by avoiding professional legal advice.

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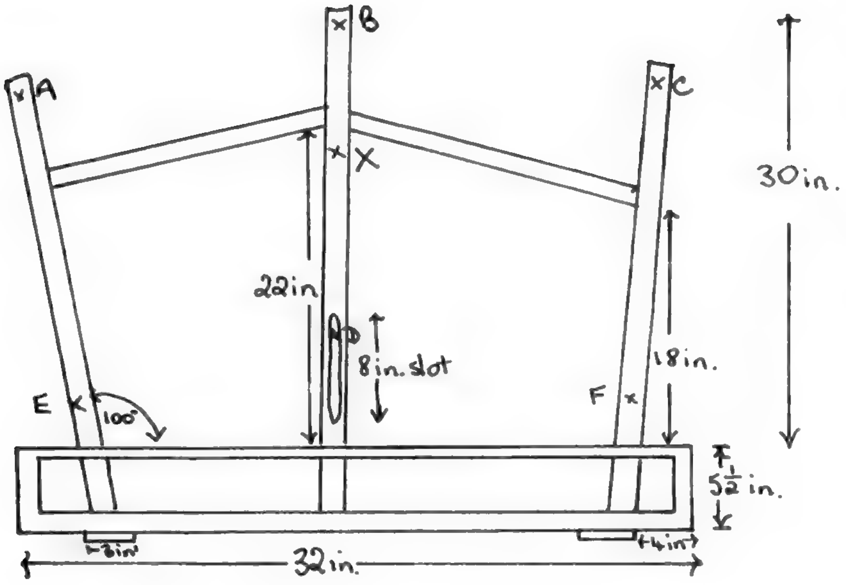
(2) The raising of capital for a co-op by issuing shares of a substantial value may give rise to many difficulties. When leaving a member sells his share back to the co-op. This would provide great uncertainty as to the co-op's capital backing, a difficult position if the co-op wishes to buy land. It would seem a debenture issue would overcome this problem.

(3) For further information, write to: Registrar of Co-Operative Societies, 302 Castlereagh Street, Sydney, NSW, 2000.



AN INKLE LOOM

BY LILY SISLOV

We are referring to EARTH GARDEN a lot, to reinforce our newly found interest and knowledge on gardening, garden pests, composting, healthy living and other topics.

EG was exactly what we needed. It gave us confidence to tackle a lot of new activities. We did not start a new life on the land, but even so, we are trying to be more self-sufficient and to steer away from over-processed products.

Since then we have started a new vegetable garden (we used to have one many years ago, but neglected it) and made a compost heap (using all our kitchen refuse), which provides the soil for the flowerpots full of herbs.

The smell of home-made wholemeal bread spreads through the house, home-made soup is bubbling on the stove (no more tins to dispose of!), a spinning wheel has made its appearance and is being used with hopes of handspun wool jumpers for next winter.

We've also worked out the plan for an inkle loom, which was adapted from Molly Duncan's Book, Spin your own wool, and dye it and weave it. Our inkle loom is threaded and worked the same way, but it weaves a longer inkle.

An INKLE is a long, woven band or braid. They can be made from handspun or commercial wool to be used as belts, hair bands, bag straps or edgings to add individuality to a dress or shirt. WARP threads are fixed across the loom, evenly spaced and parallel to each other.

WEFT threads are passed over and under the warp and at right angles to it.

The SHUTTLE is used to carry the weft over and under the warp. HEDDLES are loops used to separate alternate warp threads.

MAKING THE LOOM

We used 1 x 3/4 inch dressed pine for the uprights and 1/4 x 1 1/4 dressed hardwood for the crossbars.

At the points A, B, C, D, E, F, and X we screwed on camera film spools with bolts and nuts, using a washer between nut and wood.

The spool at D is adjustable, to change the braid around and to loosen tension.

The **heddles** are cotton loops attached at X. Knitting cotton is suitable. Cut cotton 24 inches long and knot it around spool X with a reef knot.

The spool will hold up to 48 loops, which will give a braid 2 to 2 1/2 inches wide, depending on the thickness of the wool used. Not all heddles have to be used.

We made the **shuttle** from a wooden school ruler by cutting a triangle from each end with a jigsaw.

Then wind the wool around the length of the ruler.

WEAVING

Have spool D at highest point to start. Attach wool with sticky tape at point A, to prevent slipping. Then take wool across to C, around F, D, E and back to A.

On the second round take the thread through the first cotton heddle, up and over spool B, then around the rest of the spools (C, F, D, E) and back to A. Carry on with these two rounds, till you have the width required.

To weave, press on three lower threads (those going directly from A to C), insert shuttle across, then place your hand under the lower threads, raise them above the level of the heddles, pass your shuttle back.

Do this alternatively and beat the **weft** back with the shuttle towards spool A, to make a firmer weave.

To shift the **warp,** loosen screw at D, then re-tighten afterwards.

Books recommended:

Spin your own wool, and dye it and weave it, Molly Duncan, A.H. & A.W. Reed, Wellington, NZ, 1968, 44 pp. Illustrated. This book is invaluable.

Dyes from plants of Australia and New Zealand — A practical guide for Craftworkers, Joyce Lloyd, A.H. & A.W. Reed.

Weaving is for anyone, Jean Wilson, Reinhold Book Corporation.

Three members of the same family writing for EARTH GARDEN must be a record of some sort.

The unique trio are Andrew Sislov, who wrote about striped and icy candles for us in EG4, his sister, Nina Gould (A Raku Firing, EG5) and now his mother, Mrs Lily Sislov, who tells us how to make and use an inkle loom.

LIGHT UP A TAPER

Here's a way to make candles — but a different way — without moulds. It's called dipping, and it's the oldest method of candle-making.

Dipped candles come out in various forms. Monks used to make them from bees-wax. The most basic are slender, beautiful tapers. They can be thick or thin, long or short.

This is the method: a tall cylinder is almost filled with molten wax. Then lengths of wicking are tied to a rod and dipped into the cylinder at 30-second intervals.

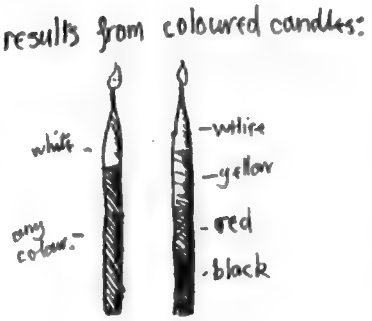
Your cylinder could be a length of drainpipe soldered to the middle of a saucepan or tin or something similar. But you must be able to heat wax in it. Pouring wax from a saucepan into the cylinder wastes wax and time.

Melt enough **uncoloured** wax to fill the cylinder, with about 4-5 millimetres at the top to spare. When the temperature reaches 82 degrees C (180 deg F), dip the wick into the cylinder, remove it, put in the next wick and so on. Dip them until they are as thick as you like.

To colour your candles, empty the wax out of the container and fill it with water heated to 82 deg C. Then pour in coloured molten wax to a depth of about 5cm. It will float on the water. Remember to leave enough space for water displacement as the candle goes through.

Now dip in the candles pretty quickly. If you do it slowly, hardly any colour will remain on the taper. If the wax is too cold, the candle will be revoltingly scaly and awful. If the wax is too hot, the candle will hardly pick up any colour.

STORY AND DRAWINGS BY ANDREW SISLOV

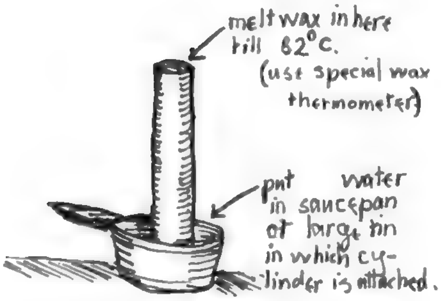


If you plan to put several colours on a candle, start with light colours, and graduate to dark ones.

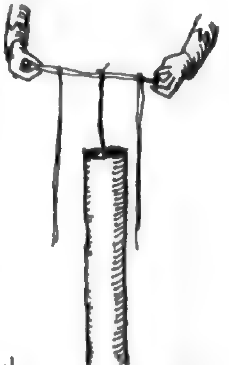
These candles are great to make and results are exciting. A really terrific book that I use is Candle Making, Search Press Ltd, (Number 27 in the leisure craft series).

NB: Don't use an ordinary thermometer. You need a special one for wax (I haven't got one yet), or a kitchen thermometer.

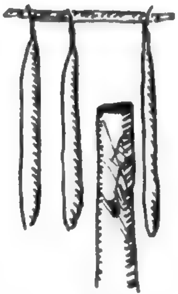
Shalom, Andrew.


melt wax in here till 82°C.
(use special wax thermometer)
put water in saucepan or large tin in which cylinder is attached.

thin dowel with wicks attached.



dip the wicks in, one after another, then go back to the first again.



the finished candles.

COUNTRY COTTAGES

KEITH VINCENT SMITH

Think of an English country cottage.

It is small, made of stone, or half-timbered, of whitewashed clay or mellow brick. Its roof may be thatched or covered with slates or curved pantiles. It merges into the surrounding fields and hills, trees and hedges as though it were a part of the natural landscape.

Roses climb over the garden gate, paths are narrow and there is a gnarled old apple tree, flowers and vegetables.

The Saxons were the first cottagers. They lived in one-roomed wattle and daub huts with earth floors. The roofs leaked and the walls let in the wind.

The fireplace was in the centre of the house and there was no chimney. This no doubt accounted for one of the points mentioned by Geoffrey Chaucer in the Tale of Melibus:

"Three things dryven a man out of hys hous, that is to seyn, smoke, dropping of reyn, and wikked wives."

Under the feudal system vassals and retainers were housed inside the castle or monastery walls. Farming was carried out on strips of land ploughed by oxen on an "open-field" system. Grains were the major crops.

Domestic animals like cows, sheep and pigs were grazed in field and wood.

Wars and the daily fight for survival kept poor men in serfdom until the uneasy peace which followed the bloody Wars of the Roses. The change to a money economy, the Black Death, other plagues and a series of famines helped to free many from bondage.

Labour was short and workers were able to demand better conditions and the right to live in their own house. The 15th-16th century was the "golden age" of cottage buildings, when they made all England a garden.

The Tudor cottage was a small and simplified version of the farmhouse. This is how John Hunt describes it in his chapter on furniture in the book, **The Tudor Period,** published by the Connoisseur magazine in 1956:

"It consisted of one moderately large room for living purposes, combining the functions of a hall and kitchen, with a chimney stack at one end housing a fireplace and oven, and a two-floored annexe, for sleeping accommodation and storeroom . . ."

Inside the furniture was sparse: "A box-bed for the good-man and his wife; straw mattresses upon the floor for others in his household; a chest or two; some stools and a form, a rough table and a hutch (serving table) for food . . ."

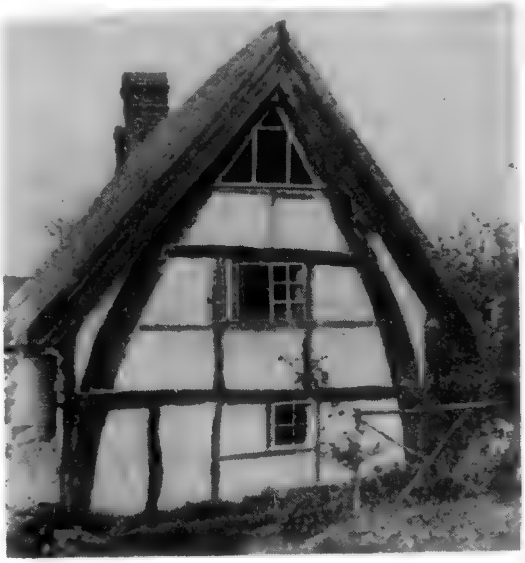
The garden of Ann Hathaway's cottage at Stratford on Avon.

There were wooden spoons and bowls and crocks for food storage, iron skillets and a pot on a crane over the fireplace. At night the cottage was lit by candles or rush lamps.

The fireplace became the focus of family life. Inglenooks made it possible for husband and wife to sit beside each other under the chimneypiece. Here bacon was cured, hanging in strips in the fire smoke.

William Morris praised the old cottages as being "models of architecture in their way". They were true expressions of vernacular art, built by craftsmen like the village stonemason, carpenter and thatcher, who took pride in their work. Cottages were at the very bottom of the social scale, almost at subsistence level, being the homes of labourers and artisans.

The character of the buildings depended on the natural materials at hand. They were substantial if stone was available and half-timbered where trees were plentiful.



Small cottage with cruck beams, at Putley, Herefordshire.

The "cruck" timber frame was a Medieval evolution of one of man's earliest shelters. Two tree trunks were lashed at the top in an inverted, curved V-shape, rather like the shape of an upturned boat.

Crucks were later extended with vertical timbers on either side to make more room and to allow straighter walls. Box-frame houses were constructed of vertical posts and horizontal beams, supporting a raftered roof.

The heavy timbers needed were selected in the forest, left to mature, then hand axed or adzed to the required shape.

The empty "bays" between these rugged oak beams were filled in with whatever material was easy to obtain locally — cob, stone, rubble, chalk and later brick (which was called nogging).

Cob was a mixture of mud and clay (and straw if available), sometimes filled in with stone or cobbles and perhaps strengthened with added chalk, lime or cowdung.

"All cob wants is a good hat and a good pair of shoes," was an old country saying. Its hat was usually of projecting thatch and its shoes of stone or brick, with a topcoat of protective whitewash.

"Cob walls for garden fruit are incomparable," said S. Baring Gould in his Book of the West. "They retain the warmth of the sun and give it out in the night."

Extensions to the cruck cottages were called outshuts (offshoots) and usually provided a roof for the pantry or buttery where food was kept.

Another style of cottage developed from the old "long-house", a low barn built in colder areas to shelter man and his cattle for the entire winter. These were most often of large stones, chinked with clay or mud.

Roofs were at first moss or turf, then thatched with straw, reeds or rushes, then with flat stones and slates, and still later with wooden split shingles and curved ceramic "pantiles".

Further reading:

The Evolution of the English House, S. O. Addy, Swan Sonnenschein & Co London, 1898, 223pp.

The Cottages of England, a review of their types and features from the 16th to the 18th centuries, Basil Oliver, B.T. Batsford Ltd, London, 1929, 86pp, many illustrations.

The English Cottage, Harry Batsford and Charles Fry, B. T. Batsford Ltd, London, 1938, 117pp.

Old English Household Life, Gertrude Jekyll and Sydney R. Jones, B. T. Batsford Ltd, London, 1939, 120pp.

House & Garden Book of Cottages, Conde Nast, London, 1963, 200pp. Mainly photographs.

The English Home Through Seven Centuries, Olive Cook (photos Edwin Smith), Thomas Nelson & Sons Ltd, London, 1968, 320pp. Large format.

Your Country Cottage, A Guide to Purchase and Restoration, Robert Edmunds, David & Charles, Newton Abbott, Devon, 1972, 176pp.

His garden was square, with the cottage close to the front at one corner; built of stone, the walls inlaid in patterns like knitting with round pebbles from Pevensey beach. The short front path was edged with cockle shells, and a border of frilly parsley set off the beds of standard roses, sweet williams and clove pinks.

Behind the thick, chunky wall grew all the flowers I was taught to embroider on tray cloths: hollyhocks, larkspur and lupins. Climbing roses, red one side and pink the other, met over the porch — so old, their main stems were thick as my wrist and black with age. Herbs sat snug in the border under the windows and all round the house, except for bay, lavender and rosemary, which formed a thick hedge.

Beyond lay the fruit bushes and raspberry canes. Then came the vegetables, in exquisitely neat and well-hoed rows, the beehives, and the gold frame for raising seedlings.

AUDREY ELLIS, Kitchen Garden Cookbook, 1972.

The commodities of these Alleis and walkes se
diligently view the prosperitie of his herbes and flower
mind, which he may by himself or fellowship of his fr
smelles of the flowers, by walking up and downe, ar
sightes and refreshing of the dull spirites, with the
vawting or arch herbers, having windowes properly ma
fully view and have delight of the whole beautie of the

T

Hoom to myn hous ful swiftly I me spedde,
And, in a little herber that I have,
Y-benched new with turves fresshe y-grave,
I bad men shulde me my couche make.

GEOFFREY CHAUCER, The Legend of Good Womer

e to good purposes, the one is that the owner may
, the other for the delight and comfort of his wearied
nds conceyve, in the delectable sightes and fragrant
about the Garden in them, which for the pleasant
harpening of memorie, many shadowed over with
e towardes the Garden, whereby they might the more
rden.
OMAS HYLL, The Gardeners Labyrinth, 1577.

And bid her steal into the pleached bower,
Where honey-suckles, ripen'd by the sun,
Forbid the sun to enter . . .
WILLIAM SHAKESPEARE (1564-1616),
Much Ado About Nothing.

1385

Of Alleis & Herbers

The covered alley or herber along garden walks and walls was a familiar feature of Medieval illustrations.

It was a bower-like structure, woven and plaited (pleached) of branches such as juniper or willow, arched at the top, or else square, like the modern pergola.

Nowadays we would call such a retreat an arbour. Both words derive from the Latin, herba, a plant.

The delightful herber shown is from the Gardeners Labyrinth, by Thomas Hyll, published in 1577. Hyll, a Londoner, was the best-known garden writer of Elizabethan times and his books went into several editions.

He suggested that herber paths be four feet wide and strewn with sand. Fragrant plants like rosemary, jasmine or damask and musk roses should be grown atop the herber.

The section at the bottom of the page shows a gardener planting a bloom (using a dibber) in one of the raised garden beds then common.

Sometimes, as Chaucer said, there were raised seats of turf inside the bower. Seats were also cut in earth banks and covered with aromatic thyme or chamomile.

If there is sufficient space such an arbour would make a peaceful shelter next to the cottage garden. It could be sited along one side of a house.

Here the gardener could relax, enjoy the delights of his garden while shaded from the summer sun, read a book, or even enjoy an early dinner.

It could be a simple garden house, like that of artist Neil Douglas at Kangaroo Ground in Victoria, where passion fruit vines cover an area paved with old bricks, a settee and sawn logs where you can sit and drink tea.

A more elaborate plan is for an avenue or long archway of apple trees, mixed with pears, grown on either side of a path, the leaders tied to form an arch, or trained over wire arches. A wisteria or other flowering climber could be interspersed every few trees for variety.

Cottage Gardens

The traditional cottage garden is small and sheltered, packed with shrubs and flowers in untidy and wild profusion.

It is a loved garden, a gay, happy garden, a poor man's garden, a working man's Robinson Crusoe island where he could spend his leisure hours at home.

No two cottage gardens were ever alike. Each bears the stamp of individual taste and whimsy.

The best way to make a cottage garden is to have no plan at all. They are artless and informal. So place your beds where they seem fit, taking into account climate, soil and situation, and giving little consideration to style.

Add plants and plots as you acquire more cottage blooms and as the garden expands outwards from the house.

Most of the flowers we have mentioned are perennials and require little attention. With care and regular watering and composting, they will last for years. Mulching is also a help, and dead or diseased plants should be removed regularly.

Keep in mind when making borders and beds that you should start with smaller plants, graduating in height to denser, taller blooms at the rear or in the centre. A clump of sunflowers would make a brilliant bedding centrepiece.

Daffodils, narcissus, hyacinths, tulips and other bulbs can be planted along pathways or in groups of four or five to protect each other. Pansies and violettas could flank a garden path, mixed with primulas and auriculas, interplanted with bulbs.

Besides a hedge you can put in hollyhocks or foxgloves, allowing them to self-seed, with madonna lilies in front and taller daisies behind.

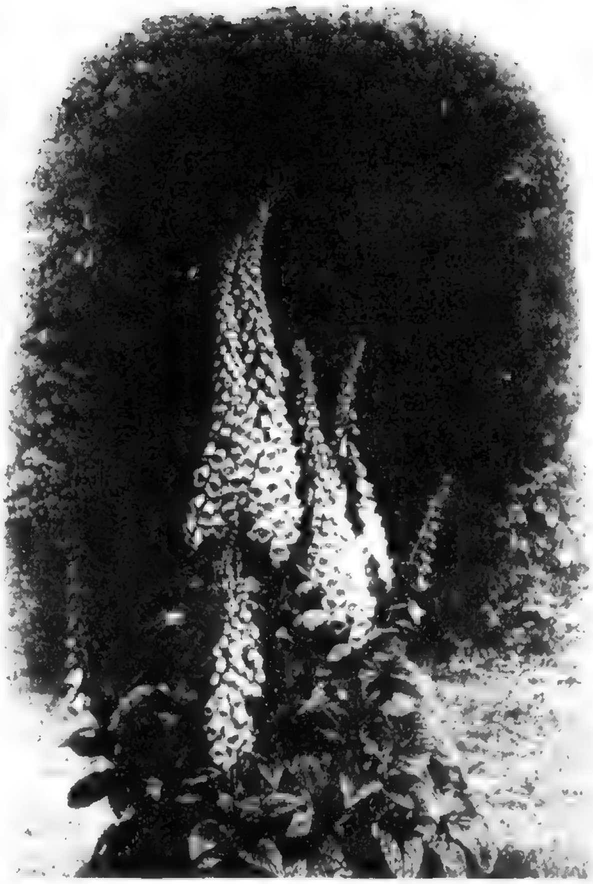
Hedges of native shrubs and trees would be best. Here is one advantage we have over the English. Honey myrtles, wattles, Christmas bush and bottlebrush would all make a pleasant contrast to the 'tamer' flowers.

A mixed rose border or hedge is almost essential as are archways of honeysuckle and rambler rose leading from one garden to another. There is no more beautiful flower than the rose.

Scented climbers could be placed near the house windows and doors, underneath the windows plant verbena and Mathiola (night-scented stock) to perfume your rooms. Tubs of herbs fit in along pathways or on the verandah, in window boxes and hanging baskets covered with tan bark.

It is said that colours can't clash in a cottage garden, so go ahead and plant your favourites anywhere. As early as 1629 John Parkinson suggested in his herbal, Paradisi in Soli Terrestis, that flowers should be planted so that "the place will seem like a piece of tapestry of many glorious colours, to increase every one's delight."

In the end, you must make your own garden. We can't tell you how to do it and it can't be learned from books.



White Foxgloves, an engraving from William Robinson's classic, The English Flower Garden.

So go ahead and do it, using these notes on some cottage flowers as a guide:

Hollyhock is a cottage garden favourite, which lends an air of timelessness to the garden once established. Plant in a sheltered position, near the wall or house. Sow in autumn and feed with well-rotted manure. Spikes are six feet high, with vivid blooms three feet of their length. Remove the stems after flowering to promote the life of the plant.

Foxglove (Digitalis) is another hardy perennial, three to four feet high, with large spikes of bell-shaped flowers. Easily grown from seed, spaced two feet apart. The name comes from 'folks' glove', or the gloves of the good folk, as fairies were once called.

Paeony, an ancient plant, is hardy and durable, needs no attention and will last a lifetime. Propagate from roots and plant one-inch deep in groups. Makes a dense bush of gorgeous, fragrant flowers.

Cornflower is a winter-flowering annual. Its stark blue flowers are excellent for cutting as bouquets. Sow seed in circles of about 15 inches in diameter for the best effect.

Sweet Peas should have space for themselves in sunny, sheltered spot and can be trained up a wire netting fence, canes or a trellis. They will repay you with colour and perfume.

Sow late-summer to autumn in a narrow drill one inch deep. There is a dwarf type, Bijou, which is good for borders, pots and window boxes.

Anemone, aster, auricula, Canterbury bells, camellia, chrysanthemum, cornflower, cowslip, crown imperial, daffodil, daisies, dianthus, forget-me-not, foxglove, geranium, hollyhock, hyacinth, iris, larkspur, lilies, lupin, marigold, narcissus, nasturtium, paeony, pansy, periwinkle, phlox, polyanthus, poppy, primrose, red and white roses, snapdragon, stocks, sunflower, sweet william, tulips, violets and wallflowers.

These are the familiar flowers of the cottage garden, old and new.

The first cottage blooms, like cowslip, periwinkle, coriander and paeony were not grown for their beauty, which was incidential, but for their practical use as herbs.

Their fragrance was used to ward off the smells of unsewered places, of rank meat and the plague. Many of the flowers and plants we think of as typical of cottages were unknown until Tudor times.

For example, lupins were first introduced by John Tradescant, gardener to Charles I, and asters, phloxes and cornflowers by his son, John the Younger from Virginia in 1637.

Other additions were tulips, or Turk's Cap (which came from Turkey), auricula, hyacinth, crown imperial, chrysanthemum (from China and Japan), dahlia (from Mexico), lupins, sweet peas, potatoes and even runner beans.

The beautiful Madonna lily and the Damascus red rose had earlier been brought home to England by Crusaders returning from the Holy Land.

As new plants were introduced, the cottager set them out wherever space could be found for them in his garden.

"Thus the cottage garden became a place of delightful disorder," writes Audrey Ellis in her Kitchen Garden Cook Book (reviewed in EG5). "Green cabbages neighboured with cabbage roses, daffodils with onions, and close by grew marigolds, whose bright petals were in demand for onion stews and salads."

Onions, garlic, parsley, fennel, borage, hyssop, sage, lavender and cabbage and kale were among the first cultivated herbs and vegetables. A few fruit trees were planted here and there, mainly apples and pears, with cherries and gooseberries and wild strawberries.

"The plants of the first cottage gardens were almost the only possessions of the countryman," writes Roy Genders in The Cottage Garden. "And he cared for them as those of a later age cared for possessions in the home."

His book is the most recent and comprehensive work on cottage gardens. It is beautifully written and illustrated and a worthy successor to the long chain of English literature written by enthusiasts about the flowers and plants they love.

Rare varieties of flowers have been preserved, half forgotten, for centuries, in obscure country gardens, though lost even to florists and horticulturists.

Says Roy Genders: "It is because of the cottager's love of his plants that the favourites of long ago have persisted to this day for they were provided with the same conditions that were to be enjoyed under their natural surroundings and this was a constant supply of humus, and the partial shade of other vegetation, which prevents the soil from drying out about the roots during summer."

It is a fact that blooms are earlier in a cottage garden and that the plants seem to do better crowded together so closely that no earth can be seen.

William Robinson, the famous gardener and author of The English Flower Garden, led the reaction against the formal 19th century garden and can be credited with the 'invention' of the popular herbaceous border.

His book, first published in 1883, is full of wise advice on plants, detailed and informative and illustrated with exquisite engravings. His suggestion for a 'wild garden' past the household area is an excellent one. Here narcissus may be naturalized in pasture and daffodils planted about trees.

"Nothing is prettier than an English cottage garden," said William Robinson. And to the question, "What is the secret of the cottage garden's charms?", he replied: **"Cottage gardeners are good to their plants, and in the course of years they make them fertile, and the shelter of the little house and hedge favours the flowers."**

Gertrude Jekyll,. who influenced gardening styles early this century, agreed with him. "One can hardly go into the smallest cottage garden without observing something new," she wrote.

Narcissus princeps at St Nicholas House, Scarborough, England.

Some books:

The English Flower Garden and Home Grounds, William Robinson, first published 1883, John Murray, London, 989 pp. Illustrated.

Some Ancient Gentlemen, Tyler Whittle, illustrated by Sally Seymour, Heinmann, London, 1965, 244 pp. A plant collector's cottage garden.

The Cottage Garden, And the Old-Fashioned Flowers, Roy Genders, Pelham Books, London, 1969, 368 pp. Illustrated.

Flowers in History, Peter Coats, Weidenfeld and Nicolson, London, 1970, 264 pp. History and culture of flowers and herbs. Illustrated.

A winding path

In laying out cottage gardens, there is ample room for the display of both taste and judgment. Small cottage gardens should not be unnecessarily cut up with paths for they take up ground which might otherwise be made use of to great advantage; at the same time there must be free access for the convenience of cultivation, and one-half the pleasure of a garden is destroyed if a man or his family cannot walk in it in all weather.

E. HOBDAY, COTTAGE GARDENING, 1882.

Thank you Mr Hobday. It is a fact that the old cottage gardens usually contained winding paths which meandered about and led to nowhere in particular. They got quite slushy in wet weather too.

But good care was usually taken of the rustic pathway which led from the garden gate to the cottage door, sometimes circling around a flowerbed between the two.

Cottage paths are usually narrow, made of odd bits of stone or concrete, old bricks, sprinkled sand, cinders, sawdust, grass or just plain trodden earth.

Paths should be planted to the very edges, with tall plants sometimes near the front. A border of foxgloves or hollyhocks is effective.

You may prefer a flagged stone path, with thyme or chamomile between the stones. Bricks are nice in a herringbone pattern. Remember, however, that sandstock bricks are very water absorbent and will eventually crumble if exposed to the elements.

Crazy paving, made up of irregular shapes and sizes of stone, makes a fine path. Make sure the stones are of the same thickness and that the surfaces are level.

Mark out the length and width and level the path by removing a few inches of soil. Excavate another inch if you want a thin bed of sand or concrete underneath.

Set the pieces of broken paving in the sand, arranging them in an interesting pattern. Check with a spirit level that they are firm and even and space them with half an inch gap all round. Later the gaps may be filled with a fairly sloppy cement mixture to within ¼-inch of the top surface, or you can top up with earth and grass seeds.

A couple of stones or bricks may be left out here and there for a favourite plant — but don't get carried away with this idea. A few pot plants of flowers or herbs wouldn't be out of place.

Cherish The Earth

Cherish the Earth, The Story of Gardening in Australia, Beatrice Bligh, Ure Smith, Sydney, 1973, 132 pp in Association with The National Trust of Australia (NSW), 123 Clarence Street, Sydney, 2000. Price: $7.95, plus postage.

With breathtaking vision and sweep, this beautiful book takes in the whole history of gardening in Australia from the first white settlement to the present day.

Unfortunately the author, Beatrice Bligh, died just a few months before the final publication last year, after working on the book for several years. She was a prize-winning gardener and her first book, Down to Earth, told the story of her success and won many readers.

The book is unique in many ways. It is, strangely enough, the first to cover Australia's horticultural history. The reproductions of water colours and oils are in true colours . . . not too often seen in Australian books. Apart from that, it is a first edition, limited to 2,000 copies, and will someday be a collectors' item if it isn't already. Anyone who buys it supports the work of The National Trust.

Beatrice Bligh has dedicated her work to the courageous early Australian gardeners — "especially the pioneer women — who faced drought, flood, bushfire, heatwave and even snow, possibly all in one season, but whose enthusiasm never diminished."

"Through long, hot summers," she says elsewhere, "they toiled in their small gardens in a formal English cottage style, always trying to reproduce what they had left behind . . ." This recognition of the role played by women in our early days is also something special.

The story of gardening in those days centred around the search for water. "First there was the hoeing by hand of ground which, after rain, once again set to a concrete hardness in the scorching dry heat of summer. Large fruit and vegetable gardens were set on slopes where water was guided along in channels. Then followed the laborious task of carrying buckets of water to tender plants which had originated in England's mists and deep loam soils."

The traditions of gardening and architecture were English and remained so throughout most of the 19th century. Later came the vogue for native plants and shrubs and for smaller gardens as houseblocks shrank from farms to their present size.

Settler's cottage and garden.

This is how Beatrice Bligh describes the Australian cottage garden of the 1870s:

"The path to the entrance of the home usually divided in the middle to pass around either side of a central flower bed, often containing the same plants as the English cottage garden: ribbon grass and pansies, roses, cosmos, sunflowers, hollyhocks, lilies and sweet william . . ."

But with a difference . . . "In the shrubberies at the side there might be clumps of Pampas grass from Persia and lilac and honeysuckle from China. At the edge of the lawns there was usually a clump of Agave from Mexico, or Yucca from South America sending up its large spires of heavenly scented cream florets, or a spring cactus."

There is much more on gardens and gardeners, on explorers, stately homesteads, Botanical gardens, colonial life and times in Cherish The Earth. It is well told and worth reading.

Pointers

Users of mantle-type lanterns were recently warned in Science magazine (Vol 181, August 31, 1973) of the dangers of toxic fumes emitting from the mantle.

Mantles are made up of the oxides of thorium (95 per cent), magnesium, aluminium, cerium, beryllium, and silicon. It is the beryllium which becomes volatile and is released into the air during the first 15 minutes use of a new mantle (but **most** of it in the **first minute**). The inhalation of the 600 micrograms of toxic beryllium in each mantle can be hazardous.

So, for your safety, we suggest that new mantles be first lighted outdoors and that you keep your face well away. Alternatively, use a lantern with no mantle.

Rob Mitchell of Uki, NSW tells us that the Cinva Ram (EG5) now costs $220.00 from the Australian agents, Queensland Pastoral Supplies Pty Ltd, Box 768, GPO Brisbane, Qld, 4000. Inflation hits the mudbrick builder too!

For those who were interested in the idea of starting a school with State Government funds (page 43, EG7), the author of the article, "Anonymouse", has asked us to point out that the establishment grant for schools is now $1600, and the annual equipment requisition $150 per school and $4 per pupil.

China's way with energy

ROBERT RODALE REPORTS FROM SHANGHAI

There's an energy crisis in China today and there's been one here for thousands of years. Yet the average person gets along quite well — probably much better than we Americans would if our land space (which equals that of China) had to be occupied by 800 million people.

Coal has been mined here longer than any other place on earth, and there's plenty of recently discovered oil under China's soil. For economic reasons, though, those resources have been little-used. Now that industrialisation is a major goal of China's political leaders, coal and oil reserves are being tapped at an increasing rate and are feeding an expanding economy.

In the meantime, ingenious means are used to get the maximum in life-giving support from whatever fuels are at hand. Here's some of the techniques the Chinese use:

1. **Wear warm clothes in winter.** Chinese go very easy on home heating, even in the north. They conserve body warmth to a far greater degree than we do, by wearing layers of sweaters and padded outwear. The same clothes are usually worn indoors and outside.

Comfort is sacrificed and the Chinese tend to catch cold easily in winter, but they avoid the tremendous heat loss that is a part of our centrally-heated winter environment.

2. **Use human-powered transport.** There are no private cars in China. Motorcycles are a rarity and even prosperous rural communes may not own trucks.

People walk everywhere, as evidenced by the lacework of footpaths that crisscrosses the countryside. When the Chinese are not walking they're riding bicycles, usually carrying a load of some kind as well as themselves.

Hand-pulled carts are the basic freight carrier, outnumbering horse-drawn vehicles in most areas. Goods and people who move under human power need little subsidy in other fuels, and cause no pollution problems.

3. **Grow food everywhere.** Nothing beats agriculture as a low-pollution energy conversion system. Green plants trap the rays of the sun and turn them into easily-stored food energy.

The Chinese, following the example of the Tachai production brigade in Hopei province, are sculpturing their earth to turn hillsides and swamps into productive land. Hand cultivation and weeding saves fuel, and liberal use of organic fertilisers makes Chinese farm plots astoundingly productive.

Since Liberation in 1949, farm output has increased markedly. One rural commune our group of journalists visited near Shanghai grows four and a half crops a year on land that used to produce only two.

Harvest in China.

4. **Waste nothing.** Litter baskets are not numerous in China, and the few that exist seldom need emptying. Everything possible is saved and reused.

Food hardly ever comes wrapped. Straw is used to make containers for fruit and other things, and later is used for other purposes. The amount of paper the Chinese use for all purposes is so small as to be mind-boggling. There are no copying machines, and newspapers generally run four to six pages.

The lower limbs of trees are used for cooking fuel in much of rural China. As a result, the profile of their mountains presents a far different picture than ours. All the underbush has been consumed, leaving an interesting white space between treetops and the ground.

5. **Live communally.** By getting together in large groups, the Chinese save many resources. Living spaces, even in the countryside, tend to be closely packed. There's little duplication of effort or of energy consuming facilities like stores and shops.

Does the Chinese system work? Yes, it certainly does. Although there's no luxury in China today, there's no abject poverty either. With a very small energy input per capita, the Chinese are creating a satisfactory life for themselves.

A family farm

Hugh and Diana Goldup and family live on a 48-acre citrus farm near the Murray River in the far north-west of Victoria.

They live in an A-frame house which they built themselves, grow their own vegetables and kill their own meat.

"We have almost always lived either in the country, or on the edge of a town," says Hugh. "So we have always had plenty of breathing space, a vegie garden and chooks. My father has been brain-washing us all our lives about putting organic matter back into the soil."

Besides the orange grove, the Goldups have "a couple of acres of vines, a couple of acres of asparagus and a bit of lucerne to pump drainage water on to, which is mown and spread on weak areas of ground."

Hugh is interested in steam engines and has a wood-fired steam tractor, a steam traction engine used as a circular saw and a paddle-wheel steamer and has had a steam three-wheel motorcycle. Knowing this it comes as no surprise that he was once a fitter and turner, and is handy at most things.

"All the steam plants I have built have been made from scrap in the main," says Hugh. "This has been necessary because I just couldn't afford to use new materials."

He makes up steam generator coils from old kerosene refrigerator condensers. One engine started life as an old AJS motorcycle, was converted to steam, used on the boat, then the tractor and is at the moment on a small sawbench.

We'll let Hugh tell you some more about their farm, which is called "Aycienda" in his own words:

"Our soil is mainly sandy, but we have some clay also. Everything grows like mad provided it is irrigated, as we only have an average annual rainfall of ten inches. Last year I think it was a record — 21 inches — the year before 5 inches!

"In front of our place is the main road, then river flat, covered with box and redgum. The river (Murray) is only about 100 yards away or so, although recently it was right up to the road.

"As a result of this the place abounds with wild duck, water fowl, coots, in fact all kinds of bird life. We have also caught a large quantity of fish and are catching lots of yabbies. Delicious.

"We can grow many vegies all the year round because we have so many hours of sunshine. The only worries are frost in winter and heat in summer. This last makes it hard to grow lettuce, peas and cabbage, but it is possible, with plenty of water and mulching and using some shade.

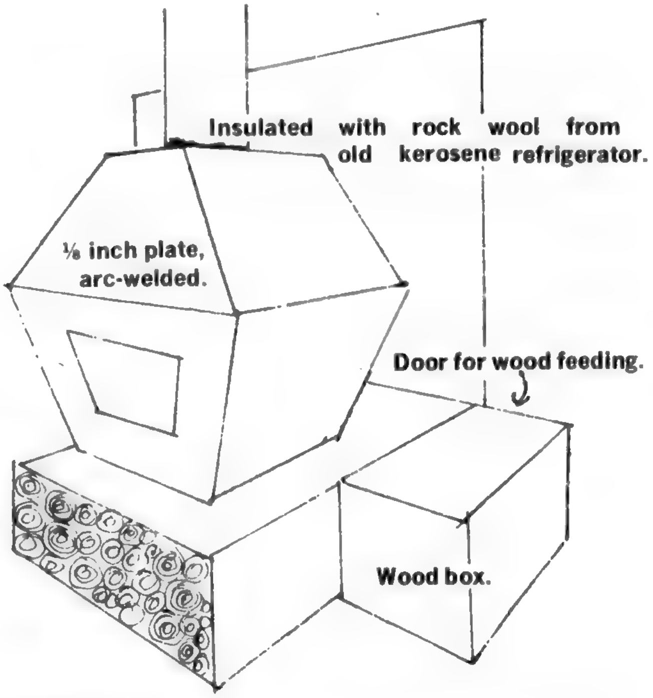
"On the other hand, we can be eating pumpkins (butternuts) by the end of November, also cucumbers, field tomatoes and capsicum. This is a particularly busy time of year as we are harvesting Valencia oranges, our biggest crop. The vegie garden also takes a lot of time as the weeds grow as vigorously as the plants.

"Diana has been drying apricots, pickling onions and walnuts and freezing excess vegetables.

"I suppose we live in a 'family commune', as my father and mother live in their own house here and also my brother and his family.

"The houses are well spaced by gardens, planted up with lots of trees, mainly natives, although the biggest and best tree is a cottonwood, planted a year before we came here. Although only 14 years old it is 82 feet across and about the same height. Certainly a quick-growing shade tree and also good for wood, though it must have plenty of water.

"Well, I must go and bottle up the beer." That's how Hugh finished his last letter to us. Hugh and Diana also make their own wine, including fruit wines like orange and lemon, and vegetable wine.


Insulated with rock wool from old kerosene refrigerator.
⅛ inch plate, arc-welded.
Door for wood feeding.
Wood box.

HUGH GOLDUP

Our A-frame house is heated entirely in winter by a large steel heating stove. I built this from scrap picked up at the tip . . . we have been tip scroungers for years.

The chimney was made from an old pump suction pipe.

Ash drops through a small grate into a compartment which can be cleaned from outside.

I hope also to get a water heating pipe into this stove and connect it up to the hot water tank.

At the moment we use wood for all our heating and for hot water.

We can get as much as we need from the river flat. There must be thousands of tons of dry redgum and box lying around. We can also get mallee roots from the local farmers.

An A-frame rises

The A-frame rises. The photo at top far left shows the skeleton of the first frame. The A-shape used was a 30 foot equilateral triangle. The heap of sand in the foreground was carted from the river sandbar for cement used in the mortar and flooring.

There was one major mishap. The white cedar seen behind the skeleton frame blew over in a storm, toppling the structure.

Top left: This is the second frame, with purlins (horizontal roof timbers) in place. The old cottage is at left.

Bottom far left: The roof in place. Roofing iron is in one full length — 30 feet. The four ground floor walls were lined with tongue-and-groove pine board lining, each four inches wide and ½ inch thick.

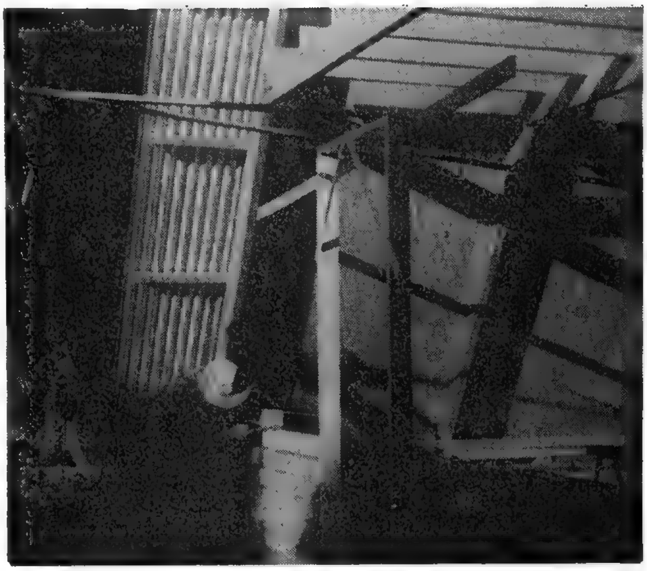
Bottom left: The finished house in October, 1969. Eaves have since been added to stop birds getting in. Front windows were made from second-hand ¼ inch plate glass and slide open.

The ground floor is 30 x 30 feet, the first floor 30 x 20 feet, giving a living area of 15 squares.

At work. Top right: Footings for the A-frame were terra cotta bricks (seconds) laid on about three inches of concrete. The soil is sandy here.

Middle right: Diana trowelling concrete on the floor. Polythene sheet is laid down first to act as a "damp course", to stop any rising moisture.

Bottom right: Father (Mr Goldup Snr) laying bricks at the rear of the A-frame.



DRYING FRUIT THE EASY WAY

For apricots, pears, plums and peaches — mince and add sodium or potassium metabisulphite (buy from chemist).

Use 12lb fruit, washing it, removing the stones or seeds and other waste. Then mince into a paste.

Add ¼oz (about teaspoon) of s or p metabisulphite, stirring in well to give it an even distribution through the mixed pulp.

Spread on drying trays or plastic sheets. Place in the sun, preferably on the roof of a shed. Each strip should be ½ to ¾ inch thick and six inches wide.

Use a pot scraper to spread food evenly and square edges. Fruit should be left in the sun at least a day to fix the colour. After that, drying can be completed in sun or shade.

After about three days the strips can be turned to hasten drying. When dry roll into strips and store in airtight containers.

PUMPKIN SEED NIBBLES

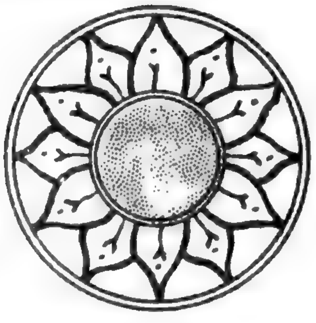
Wash seeds well, removing any pumpkin which clings to them. Drain. For ½ cup pumpkin seed allow one cup water and four tablespoons salt.

Combine these in saucepan and bring to boil. Then reduce heat, simmer 20 minutes. Leave seeds to cool in brine, then set aside, still in brine, three to four days.

Drain well, rinse under cold water. Spread out on baking tray and bake in cool oven 1½ hours. Keep in airtight jars.

DIANA GOLDUP

Alternatives in action:



The Kiwi Book Farm

Tapui Books, 13C RD Oamaru, New Zealand. That's the address of "New Zealand's most isolated bookshop" which sells books by mail from an old farmhouse, 22 miles inland from Oamaru in the South Island.

Tapui Books are also wholesale distributors in New Zealand for EARTH GARDEN.

Behind the name (which means "friend" in Maori) and the venture are Bob and Patricia, who see Tapui as part of a revolution — "a personal, peaceful revolution; perhaps turning people on to new ways of feeling and thinking".

Bob was the founder of the successful ABC Bookshop in Nelson. Both were leading what they describe as "comfortable middle-class lives", but began to find this less and less satisfying.

After mixing with a growing alternative society in New Zealand they decided to break away completely and start a new life together.

Pat is 37 and Bob 45. They now live at Tapui with Susan and Sarah — two of Pat's four children. Here's their story:

BY BOB AND PATRICIA

Our search for a reasonably priced piece of land in New Zealand was not an easy one. With the limited cash at our disposal, both for buying a home and starting the book business we decided that the south of the South Island was the obvious and perhaps the only choice.

We first looked around the Timaru area, where a friend we had met at the national Values Party conference kindly gave us the use of an old farmhouse. While looking inland from Timaru for land, we were also busy poring over publishers' catalogues, ready to place orders for books on the alternatives.

Timaru proved too expensive, and we decided to look around the Oamaru area, 50 miles further south.

Well, the first land agent we went to just happened to have an isolated (to him) cottage with 3½ acres of land — all for $4000. It was a nice afternoon and he welcomed the idea of a drive into the country.

As soon as we walked through the gate to a beautiful old world garden and met "Dot" the owner — a truly liberated 77-year-old widow — we knew that this was it. Dot was moving into a flat in Oamaru because the property here was becoming too much for her to care for single-handed. We liked her, she liked us, and the decision to buy and sell was more or less immediate. We took possession at the beginning of June last year.

Most of our energies have been used in the book business over the last six months. After placing our initial orders for stock we started building up a mailing list. We did this by asking our friends to let us have names and addresses of others who could be interested.

We also placed small advertisements in the NZ Listener, student publications, literary journals and alternative publications. Once the business started to grow we found that our main source of new addresses for the mailing list was word of mouth — customers telling friends, who would then write in to us.

Now we are getting into wholesaling to other booksellers with publications like EARTH GARDEN, The Mother Earth News and hard to get American books of a counter-cultural nature.

The feedback from the homesteaders, teachers, freaks, students, communalists and radicals throughout New Zealand has been wonderfully warm and encouraging, and most weeks someone stops off here to visit. Our conservative farming community must by now be getting used to the dilapidated vans and campers and colourful characters who knock at their doors while searching for our place.

Our dream of self-sufficiency on the land is a little closer to being realised, but we still have some middle-class ties. Because the nearest secondary school is over 20 miles away, Susan will have to board this year — an expensive business. Also, like any business, we have overheads.

However, we are only running one vehicle, a Kombi; we are growing most of our own vegetables and we have fruit trees planted; the bees in our two hives are buzzing busily; we'll have a cow and calf shortly and we intend to get hens before long. Also on the credit side, the telephone is away from the bookshed up at the house, we wear what we like, we work when we feel like it (no set hours) and we don't get constant interruptions.

Our books range over the whole counter cultural scene: encounter and sensitivity, alternative life styles, personal awareness, natural food, organic gardening, the environment, free schooling, community, poetry, crafts, homesteading, rural technology, etc, etc.

We are not particularly interested in selling much stuff on the political scene. So much of it is strident and negative, and we prefer to point out the alternatives rather than just heaping abuse on "the system".

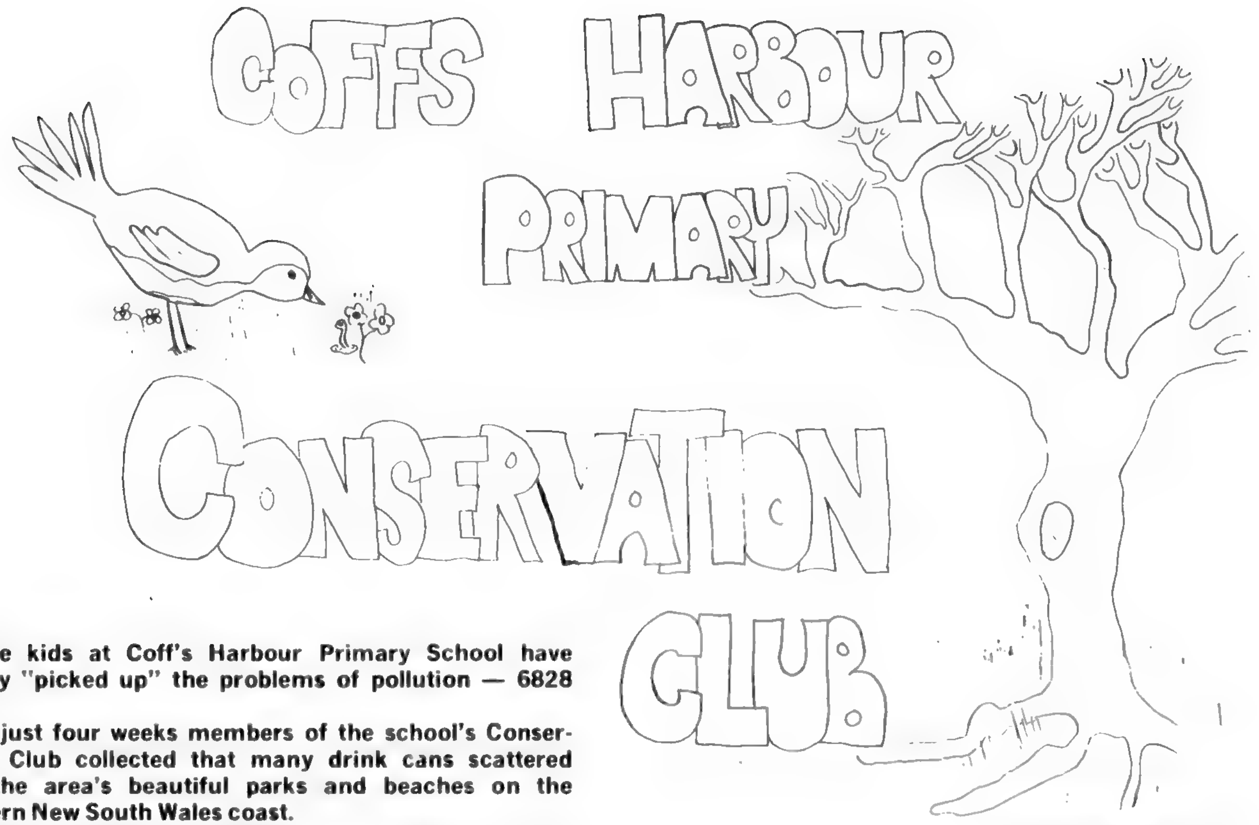
We've tried to get away from the usual male/female stereotyped roles, and share equally in the housework, bookselling and gardening. It hasn't always been successful, but we are working on it.

Now that the energy crisis is starting to bite, more and more New Zealanders will be leaving the cities and searching for alternative life styles. Small parcels of land such as ours will increasingly be in demand, and local authorities will be obliged to alter their laws regarding the purchase of smallholdings.

The decentralist, back-to-the-land movement is truly under way now, over here.

Most of our Kiwi readers already know about Bob and Patricia's good work. Australians are welcome to write for a book list and the prices are on a par (but add 20 cents each item for mailing). Remit by bank draft in $NZ or money order.

By the way, we'd be interested to hear from other New Zealanders on how they're escaping the 9-5 rat-race or making a go of it on the land.



From the project book.

The kids at Coff's Harbour Primary School have literally "picked up" the problems of pollution — 6828 times!

In just four weeks members of the school's Conservation Club collected that many drink cans scattered over the area's beautiful parks and beaches on the northern New South Wales coast.

They had chosen the drink can as a "token symbol" of litter with the aim of focusing public attention on the waste problems in the Coff's Harbour Shire.

Their aim was achieved and in the process they made the front page in the local press, won the area's Earth Day competition and raised money to set up a nature strip with an organic garden, rock pool and native tree plantation at the school.

The Coff's Harbour Primary Conservation Club was formed at the beginning of 1973 with about 80 members. its aims were:

1. To develop positive attitudes in children to preserve their natural environment.

Left: Teacher Ray Babbage and the children collect cans at the beach. Above: This was the result — a display representing just one of each type of can they found.

2. To develop the knowledge and skill of conserving and recycling our limited resources.

3. To create public awareness and reaction on conservation issues.

"When the other kids saw what we were doing, membership sort of grew, and by the end of the year we had over 200 financial members," teacher Ray Babbage told us recently.

Once the point was made about litter, the children continued to show the way by practical examples of working in harmony with nature.

They built a compost box using pine packing case strips.

At lunch time a special red garbage bin was taken around the playground to collect food scraps for the compost heap. Enthusiastic members brought manure (horse, cow, pig, chook and even pigeon), grass clippings, leaf mulch and household vegetables scraps.

"Kids would bring along bags of chook manure to school, even on the school bus, or parents would arrive with a trailer load of horse manure," says Ray.

The children prepared their first garden plot and planted it with peas at the end of June. "Then, as spring approached, we planted corn, watermelons, carrots, beetroot, beans, lettuce, silver beet, tomatoes, parsley, potatoes, rockmelons, cucumbers, radishes and zucchini," Ray continues.

"As summer approached, happiness and joy filled the hearts of those little gardeners as they saw their vegies progressing. Daily reports came back of Mums' and Dads' approval of the yummy vegetables the kids had carefully nurtured and then proudly presented at home for the evening meal."

The garden plot was divided so that each group of three or four children could have their own particular area which was their responsibility.

"Generous and regular fertilizing with compost and manure is turning the infertile soil into a productive plot," recorded the club's well presented project book.

The books (there are two of them) contain press cuttings, photos and the children's colourful drawings of the club's progress with their project. Under the heading "Natural Bushland" it lists the many types of native trees that have already been planted, including wattles, gums, bottlebrush, grevilleas and honey myrtles.

"The native shrubs have been planted to allow for natural selection and to provide a dense, bushy area.

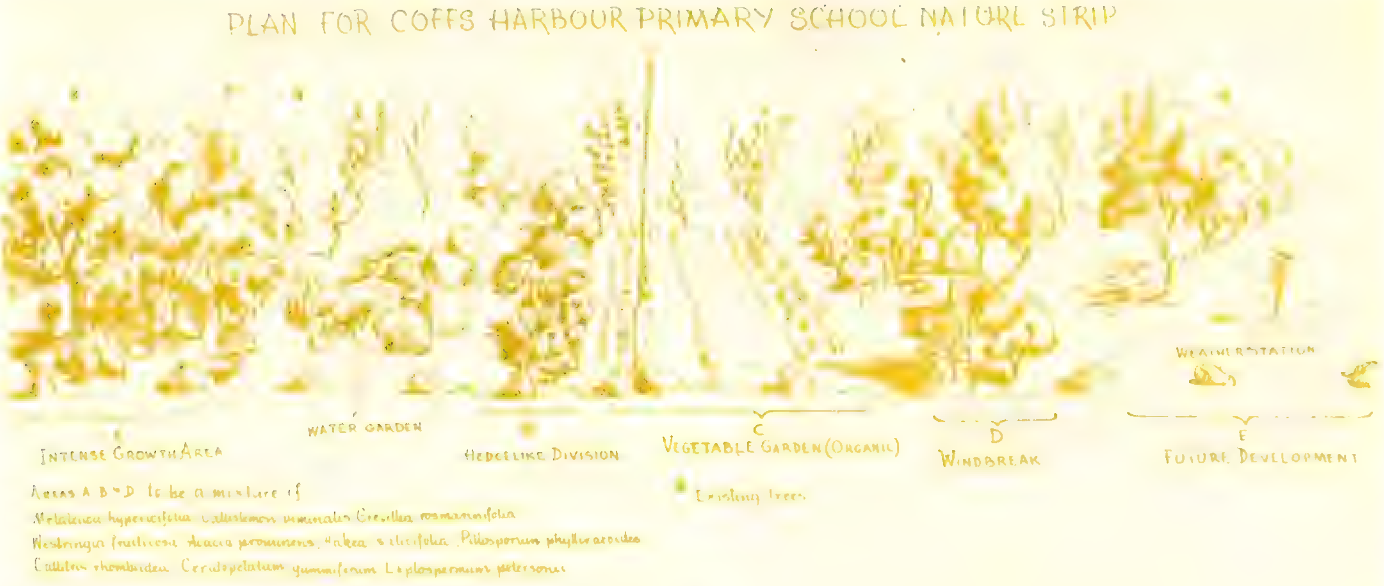
"It is hoped native fauna, especially birds, will be attracted to this natural environment."

The rock pool has now been built and future plans include a hedge between the vegetable garden and the rock pool and then a windbreak to protect the other side of the garden.

The $199 odd raised by the "collect-a-can" effort was applied to buying fencing, a hose, a rotary hoe, native plants, soil and the pond materials. And there's a small balance left over to help the club continue its good work in 1974.

Coff's Harbour is a beautiful place and the kids at the Primary Conservation Club are aware of this and are doing something to conserve it . . . and to improve it.

A small note from Ray Babbage: "I'd like to extend an invitation to any like-minded people who would like to spend a few days around Coff's Harbour enjoying the surf and gardening to share my home. Please write and arrange a date." Ray's address is: Box 683, PO Coff's Harbour, NSW, 2450.


PLAN FOR COFFS HARBOUR PRIMARY SCHOOL NATURE STRIP
INTENSE GROWTH AREA
WATER GARDEN
HEDGELIKE DIVISION
C
VEGETABLE GARDEN (ORGANIC)
D
WINDBREAK
WEATHER STATION
E
FUTURE DEVELOPMENT
Areas A B + D to be a mixture of
Melaleuca hypericifolia Callistemon viminalis Grevillea rosmarinifolia
Westringia fruticosa Acacia prominens Hakea salicifolia Pittosporum phyllraeoides
Callitris rhomboidea Ceratopetalum gummiferum Leptospermum petersonii
Existing trees

Hi-Ho, Hi-Ho, it's off to work we go! Note corn growth in background.

Some "good fairies" reaping the garden's reward.

Tree planting time.

Cottage cheese

Cottage cheese is a fat-free milk product that is almost pure protein. It goes well with all kinds of fruit and berries, with salads and in cheese cake.

It is in fact the "curd" part of the curds and whey formed when milk is left to sour, separating into solid curds and watery whey.

Hard, yellow cheese needs gallons of milk to form just a tiny piece of cheese, so, unless you have a dairy, soft cheeses are the best to make.

METHOD 1:

2 pints milk
2 tablespoons lemon juice
4 tablespoons yoghurt
½ teaspoon salt

Heat the milk in a heavy-bottomed pot until foam begins to rise (not boiling). Take off heat and add lemon juice and yoghurt, stirring gently. The curds will begin to solidify almost immediately.

Add salt. Let mixture stand for a few minutes.

Line a sieve or colander with a piece of muslin or cheese cloth (double thickness is best) and place it over a bowl or basin.

Pour the contents of the pot into the sieve and let the curds drain until cool. When cool, squeeze the cloth around the solid curd to remove all the excess whey.

Hang the cheese up, or wrap it in the muslin and put it on a board with a flat weight to press the cheese. Leave for a few hours. The result is then a smooth, mild cottage cheese, excellent with fruit, spread on bread or cut up and fried for eating with curry and pasta dishes.

To "liven up" mild cheese, add some cream and chives or other herbs (or spices) and mix.

METHOD 2:

Another way to make cottage cheese is to leave yoghurt "making" an extra day. An easy way to make yoghurt is to preheat the oven to 250-275 degrees F.

Add 4 tablespoons of yoghurt "starter" per pint to warm milk. Mix gently. **Turn off oven.**

Put in the yoghurt mix and leave 8-10 hours for yoghurt, 24 hours or so for cheese.

Cottage cheese can be made from any fresh milk — cow, goat or sheep.

METHOD 3:

Mrs N. Hollensen, of Traralgon in Victoria, sent us this "old-fashioned" recipe for cream cheese:

Make a junket using two tablets for every pint or so of tepid milk and allow to cool. Break the junket up slightly and add salt.

Have a square of old linen, place over a basin and pour junket on [illegible]

Tie the four corners of the linen together, place in a draft in a cool place to drip. An old meat safe or a Coolgardie safe is ideal. Leave it for a couple of days. Then it's ready.

I made this cheese years before I'd even heard of a fridge. The safe is because blow-flies like the cheese too!

GAS POWER: methane

Harnessing bacterial action to dispose of animal wastes and human sewage, to produce rich humus fertilizer and to create free power as a by-product may seem like a dream.

But it is a reality. It has been done and is being done in many parts of the world. The system is simply the processing of sewage or other organic matter in a gas-tight tank, rather like a sealed septic tank.

The free power comes from the gas, methane, produced in large quantities by the sewage 'digester'. This gas may be used to run stoves, refrigerators, heaters, engines or electric generators which run on butane or LP (liquefied petroleum) gas. It can run a car converted to gas power just as efficiently as petrol.

Methane gas, CH4, commonly known as 'marsh gas' is a colourless, odourless, inflammable gas, formed by the decay (bacterial action) of organic matter.

The gas is often seen rising in bubbles to the surface of stagnant ponds and marshes. It is present in natural gas and found in coal and oil deposits as 'fire-damp'. It may be extracted from coal gas.

Methane is the most simple of the paraffin or methane hydrocarbon group. It is known to have existed since the earth began and is found in the atmosphere of Jupiter and Saturn.

It is lighter than air and is practically insoluble in water and only moderately soluble in alcohol. Though it will not burn in its pure state, methane forms an explosive mixture with air, though it is safer than petrol vapour as far as fire is concerned.

The octane is higher in methane than in petrol. It has a high anti-knock value. Its calorific value is 17 per cent greater, weight for weight, than petrol.

Methane was mentioned by the Roman historian, Pliny. In the early 1800s, Sir Humphrey Davy, inventor of the miners' safety lamp, noticed the presence of methane in farmyard manure.

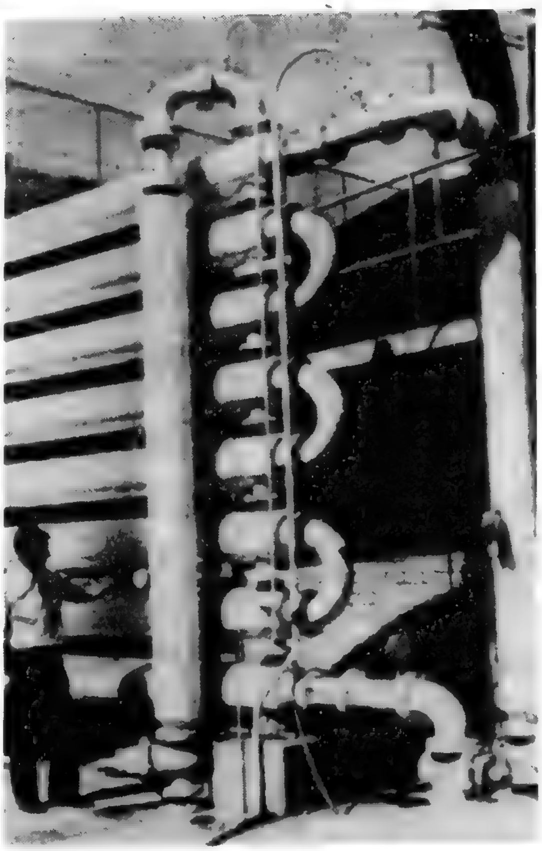
Methods of producing the gas were studied by one of Louis Pasteur's students in 1884.

The first plant producing methane from wastes was set up at a leper colony in Bombay, India, in 1900. By 1914, a Dutch development was using strawboard wastes to produce the gas.

Methane was early detected as a component of 'sewer gas' and the 'activated sludge' method of sewage disposal was introduced in Britain in the 1920s, though it was not until a decade later that the excess methane was used to power gas engines.

When Dr James Lawrie wrote his book, Methane, Its Production and Utilization, in 1941, methane was being used to generate electricity at sewage works in West Middlesex, Birmingham, Watson, Croydon and Dagenham. Dr Lawrie estimated that at that time at least 7 per cent, and possibly as much as 15 per cent of Britain's fuel requirements were going to waste in the form of methane gas released from coal mines.

Waste heat from the engines was used to maintain the sludge in digestion tanks at 80 degrees F and above, at which the bacterial process is at peak efficiency.



Part of the methane gas conversion system at the Bondi sewerage treatment works.

War-time Britain was alerted to this untapped source of power, which the Germans had not wasted time in utilizing. Before 1939, more than 22,000 vehicles had been converted to run on methane gas in Germany, mainly in the coal-rich Ruhr region.

As early as 1933, an American visionary, Russell P. Howard, had submitted plans for a sewage, rubbish and garbage disposal system, which produced methane, to the city of San Francisco. The scheme was rejected and sewage continued to be dumped into the Bay and the Pacific Ocean.

Many methane digestion plants, municipal schemes, commercial, farmyard and family unit-sized plants have been put into production all over the world.

The entire city of Milan in Italy is electrified by sewage-produced methane. There are more than 1,000 digesters in France, 2,500 in India and 3,000 in Taiwan.

Methane power generators operate the pumps, lights, machinery, lifts and ventilation at Sydney's Bondi sewage treatment works, which handle 35 million gallons of sewage per day. Similar plants are at Adelaide, Bathurst and St Marys, NSW

GENERAL READING

Methane, Its Production and Utilisation, J. P. Lawrie, Chapman and Hall, London, 1941, 66 pp.

Natural Gas and Methane Sources, James Lawrie, Chapman and Hall, London, 1961, 204 pp.

Composting, Harold Gotass, 1956, a large work which contains plans for communal-size methane generators is available from: American Public Health Association, 1740 Broadway, New York, NY 1009, USA. Price $US5.00. Gotass is professor of sanitary engineering at the University of California, Berkeley.

theory & practice

Let's move on to the theory of manufacturing methane gas from farmyard wastes.

Just about any type of organic matter can be used, for example all types of animal manure, straw and potato waste, kitchen wastes, bulk wastes such as grape skins — anything which would normally go on your compost heap.

Two main conditions are essential for methane production from farm wastes:

(1) Since the bacteria on which the process depends are **anaerobic** (able to live in the absence of oxygen), air must be excluded from the organic matter on which they work.

(2) Temperature greatly influences the speed of the process. In 24 hours one cubic metre of farmyard manure at about 50 deg F will produce 30 litres of methane, at about 68 deg F, 200 litres and at about 86 deg F, 1000 litres.

However, temperatures **above** 104 deg F will kill the fermenting organisms and halt the process. Optimum temperature range is between 80 and 90 deg F.

Manure, straw and other vegetable wastes are broken or chopped into small pieces, doused with water and left about a week **exposed to the air.**

During this aerobic treatment period, urine is broken down to ammonium carbonate with the liberation of ammonia.

Sugars and starches are also broken down and the formation of butyric acid is prevented. This acid is believed to prevent the growth of methane-producing organisms in the later anaerobic stages of the process.

When this prefermentation process is complete, the material is placed in an airtight container, where **anaerobic** fermentation takes place in three stages.

At first, the gas contains little or no methane, and may consist entirely of carbon dioxide. Small quantities of hydrogen sulphide ("rotten egg gas") and ammonia may also be present.

The type of manure used has a slight effect on the composition of the gas and a large effect on the **amount** of gas produced. Pig and chicken manures in general produce more gas than cow manure, for example.

In tests in France, 100 kilograms of cow manure produced 3-5 cubic metres of gas, while 100kg of pig manure yielded 5-8 cubic metres.

The simple "Ducellier-Isman" type of farm methane plant was developed by the French. The digester is a rectangular or cylindrical container of 10 metres capacity, made of concrete.

This fermenter was kept warm by packing a thick layer of fresh manure around the newly-filled silo digester — a chain of several digesters was found to ensure a more uniform gas production.

Enough heat was produced and conducted through the digester walls to raise the temperature inside to 30-35 degrees Centigrade, which allows brisk fermentation.

Spent manure outside the silo was used to charge the next empty digester.

That's the theory. In the following articles, we look at the practical methods developed by George L. Chan in Papua/New Guinea and list sources and publications available on simple methane production. Next issue we hope to tackle the more complex subject of converting vehicles to run on LP (liquefied petroleum) gas or methane fuel.

GOOD OIL

For the time being, for transport, the majority of us are stuck with the infernal combustion engine, and it needs oil to run. Now, have you ever thought what happens to the oil that is drained out of your car engine when it is serviced?

There's nothing wrong with it except that it has become contaminated with the by-products of combustion — carbon, dust, metal particles, water. Thin oil is usually dumped, burnt, or at best used to paint the back fence.

This dirty oil can be reclaimed and re-used, over and over again, and can help beat pollution, and conserve our dwindling resources.

There is a firm in Melbourne, Leroc Oil Company, which refines used oil. They claim it is better than new, but anyhow, it's sure OK for an old car. I've been using it for four years and have had no trouble.

Here in Tasmania there is no agent, but I buy by the 44-gallon drum and sell a bit to anyone interested. Freight is about $9.00 a drum, but it's still cheaper than new oil.

A word of caution: check with the supplier about the suitability of their oils for late-model and high-performance engines, whose oil requirements are pretty stringent.

Some addresses:

Martin's Refineries Pty Ltd, producers of MA-REFINE oils, Hill Street, Granville, NSW, 2142. Tel: 637 0593.

Petroleum Products Pty Ltd, Holbeche Road, Blacktown, NSW, 2148.

Leroc Oil, 236 Ballarat Road, Braybrook, Victoria, 3019.

— S. OPDYKE, Kingston, Tasmania.

water - waste - fuel - food cycle

ANIMAL WASTE

Pig and chicken manure is ideal. Other manure and compost is useful. Concrete floors of the circular or octagonal piggery may be constructed sloping into a central digester.

DIGESTER

Capacity 300 gallons per 30 pigs and 24 hours of effluent flow. Carbon dioxide gas is produced initially, but after a few days the proportion of methane rises to 60-70 per cent, which burns readily.

A small pilot scheme should be constructed to determine gas production and gasometer size necessary. Fresh waste should be discharged into the digester each day.

SETTLING TANK

Capacity 24 hours of effluent flow. Bacteria complete digestion of organic matter and destruction of harmful organisms.

ALGAE BASIN

Concrete floor and walls one foot high. Surface area about 600 square feet with two longitudinal baffles to prevent short circuiting. Shallow depth ensures maximum sunlight penetration.

ALGAE PONDS

Pond size about 60 x 15 x 3 feet deep. Several ponds may be installed for larger piggeries. Pond is formed in the earth into a truncated 'V' shape, lined with puddled clay and covered with 3-4 inches of sand to prevent colloidal suspension of clay. Algae is removed daily and mixed with animal feeds, or sun-dried for future use. It is a high protein feed.

FISH PONDS

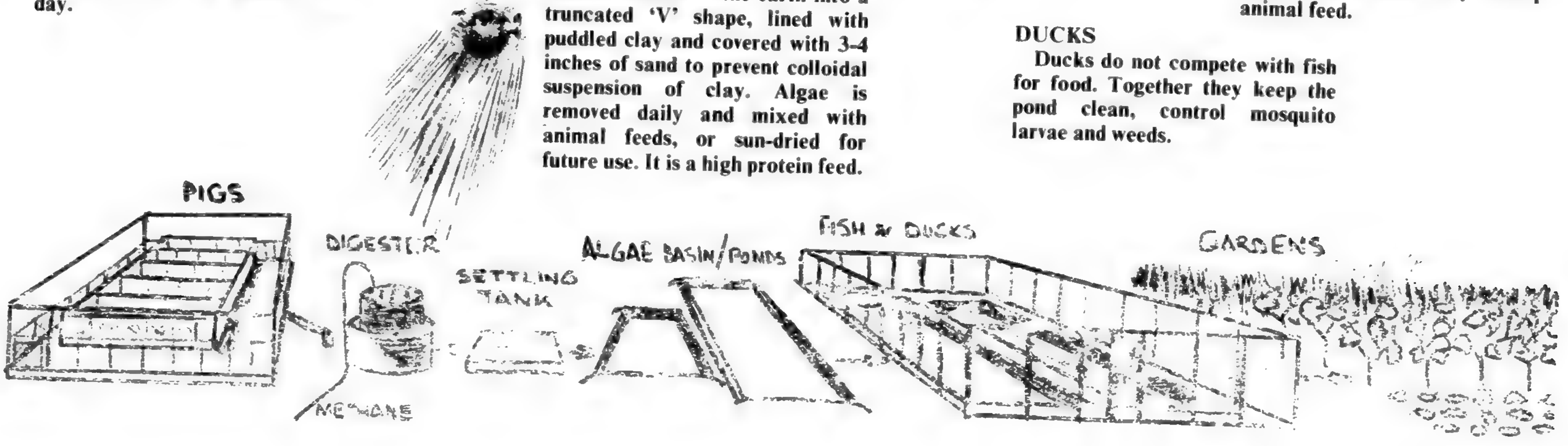
Pond size about 100 x 15 x 5 feet deep, built like an algae pond, but without the sand cover. Various species of fish may be used. Growth rate is about one pound each month. Fish may be processed into meals for animals or quite safely eaten by humans. They feed on algae and water microbes and not excreta. The use of sewage for fish culture is practised in many countries, including Israel, Japan, USA, South Africa and Germany. Several ponds may be installed for larger piggeries.

VEGETABLE GARDEN

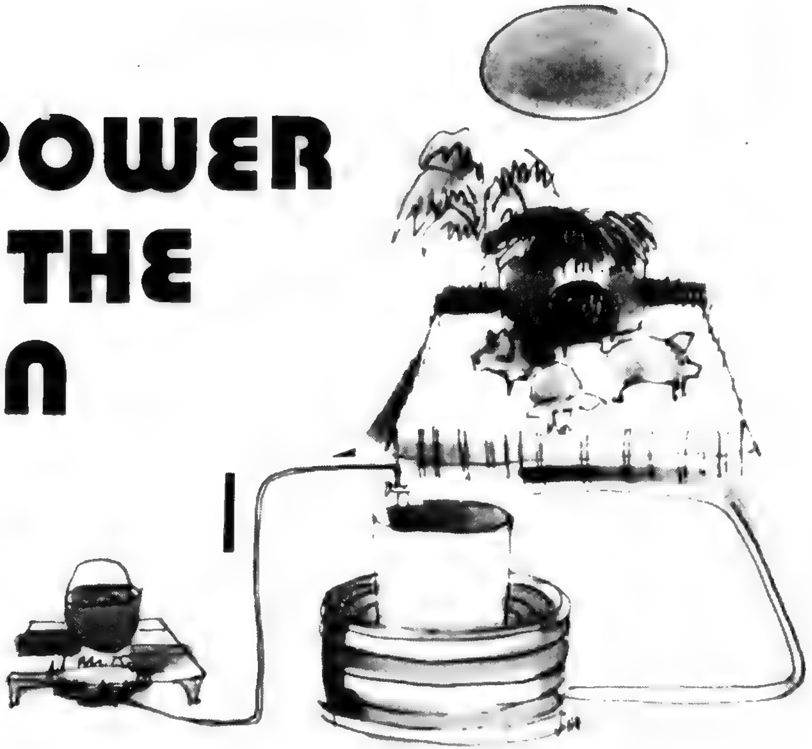
Watered and fertilized with rich effluent and humus (sun-dried sludge). Vegetables provide the bulk of animal feed, but it may be more profitable to sell them as human food and buy cheaper animal feed.

DUCKS

Ducks do not compete with fish for food. Together they keep the pond clean, control mosquito larvae and weeds.



NEW POWER FROM THE PIG PEN



From the floor of a pig pen there may be harvested an energy source that can fuel refrigerators, lights and cookers.

With simple processing, by nature itself, the droppings of pigs may be made to run a car. From the natural wastes of animals, pigs, fowls, cattle and people, comes the gas methane, an energy source more efficient thermally than petrol or liquified petroleum gas.

The familiar pig, foraging freely for sweet potatoes, may soon provide all the power needed for cooking and generating electricity in remote villages of Papua New Guinea.

Methane gas generation is just part of an integrated system of rural development envisaged for the new country by George L. Chan, senior lecturer in environmental health at the University of Papua New Guinea in Port Moresby.

His system, based on a "water-waste-fuel-food" cycle solves the problem of sewage disposal, while providing algae for stock feed and natural sludge fertiliser for abundant vegetable and crop growing.

Though suited best for tropical conditions, where water and sunlight are plentiful all-the-year-round, this efficient method of agricultural production could lead to self-sufficiency for concerned landsmen anywhere in the world.

It contains provision also for raising fish in ponds, where ducks may also be kept to control mosquito larvae and weeds. Gas power can also be used for various cottage industries.

In George Chan's system pigs are kept on concrete or brick floors which can be kept clean with a hose. The pig excreta is washed into a digester — made of a concrete tank, with a "floating" metal drum cover.

Inside the airtight digester, suspended solids settle to the bottom and organic matter in the liquid begins to decompose, accelerated by the heat of the sun. The gas produced is two-thirds methane and one-third carbon dioxide.

One pig can produce an average of 10 cubic feet of methane gas each day. By adding 1lb of dry grass per pig, gas production can be increased by up to 70 per cent!

A three-sow operation, with one boar and about 25 piglets will provide a family of six with enough continuous energy for lighting, cooking and refrigeration and is ideal for the 300-gallon digester developed by George Chan.

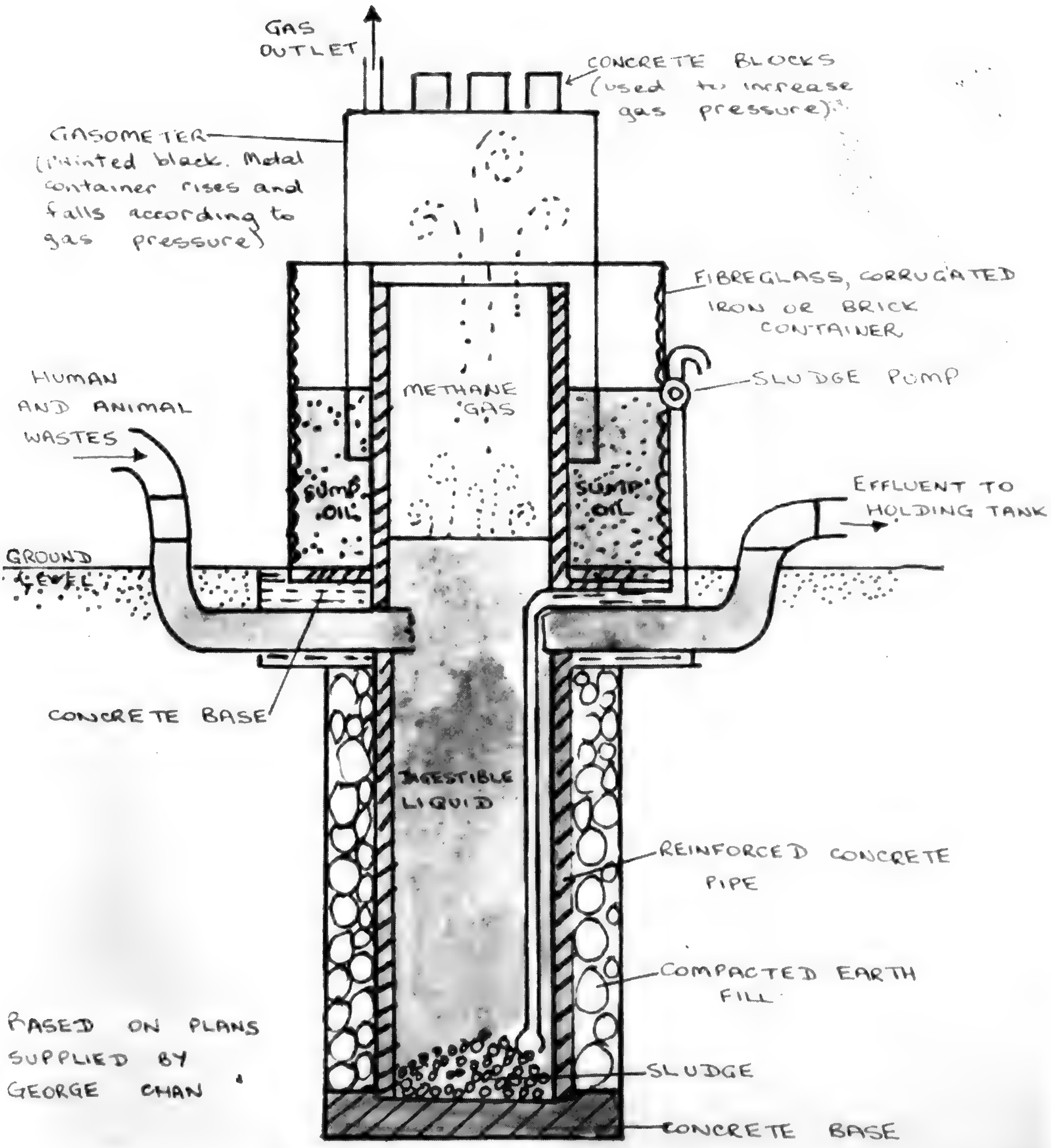
More than twenty pilot operations are already at work in Papua New Guinea, including one at Port Moresby's Bomana Prison. Others are in Fiji, Gilbert Islands, Guam, Solomon Islands, Western Samoa, Cook Islands, Tonga and Bali.

This simple manure-to-methane process could not be more kind to the environment, based as it is on continuous recycling. In a septic tank, air is present and the gases generated are ammonia and hydrogen sulphide which are of no use to the farmer.

As a waste disposal method, it is more efficient than the composting of sewage sludge as practised in Europe and the United States. Composting takes three to six months and there is much loss of nitrogen and sulphur in the end product, due to the ammonia and hydrogen sulphide liberated in the air during the process.

There is no comparison, either, with the uneconomic waste systems of metropolitan Australia — where city effluent is all too often piped out to sea at popular beaches. Here we have pollution, wasted power and natural fertiliser, plus the cost of sewage disposal!

George Chan, a bachelor of science, has been a specialist in public health engineering for many years, mainly in tropical areas. He was city engineer at the Municipality of Port Louis, Mauritius from 1954-1964,



BASED ON PLANS SUPPLIED BY GEORGE CHAN

METHANE DIGESTER

public health engineer, South Pacific Commission, Fiji, 1964-1971 and is now attached to the Department of Social and Preventitive Medicine at the University of PNG.

The integrated rural development system he has created covers varied agricultural, health, scientific and engineering skills, but is soundly based on natural principles.

George Chan knows about the inefficiency of monoculture from the practical aspect of seeing its failure in copra and coffee export crops. He resents the way indigenous Niuginians have been exploited, their way of life disrupted and their diet changed from one of simple natural foods to one of tinned corned beef, mackerel, beer and cigarettes.

His solution is literally a "back-to-the-village" movement.

"The only way to improve the lot of the rural population," says George Chan, "is to reconstruct the villages, using simple technology, to make the physical environment suitable for natural, biological processes in order to utilise the waste land, water, sunshine, air, warmth and the abundant plant and animal life — the national and natural assets — to have intensive farming, aquaculture, agriculture and small industry to meet the urgent needs of the whole community."

George Chan has learned much from the cultures of Asia, particularly Taiwan, where simple technology and intensive agriculture have improved the lot of the people. He recently revived a digester project on a private pig farm in Malaysia in collaboration with authorities there.

His primary concern with waste treatment, however, is to prevent the diseases which arise from bad hygiene and are responsible for the low quality of life in most tropical countries.

"So I designed and built my first 300-gallon digester in Fiji in 1971, and paid for it myself because no one believed it would work," he told a Department of Agriculture workshop in Port Moresby recently.

Even then, George Chan and Ian Lightfoot of the PNG Public Health Department, were accused at times of hiding a gas bottle somewhere in the works of their methane digester. But they have perservered and proved beyond doubt that their methane extraction method works.

"I have based my design on well established waste practices that I am very familiar with," George Chan says, "so I wasted no time on laboratory work or feasibility study, because I knew it would work.

"What I knew very well was that wastes cost money and bring diseases and misery to the poor.

"We have shown that not only can we make waste treatment pay, but we can also eliminate the word 'waste' from the world's vocabulary.

"What is more wonderful — and timely — is that many people in different parts of the world have also proved us right, directly or indirectly, by showing the fantastic and almost incredible possibilities of our system . . ."

MAKE WASTE PAY

BY GEORGE CHAN

In developed countries much money is spent on treatment and disposal of human wastes, without any consideration for the ecological effects that cause widespread environmental pollution, mainly because of economic reasons. But animal wastes are usually left in the open to decompose, creating nuisances and health hazards, or washed into water courses to pollute them.

But in countries like Papua New Guinea, particularly at village level, people defaecate indiscriminately, with the pigs doing the scavenging service. The same pigs provide the meat for sing-sings and are very often insufficiently cooked.

In every country of the world, including mighty USA, if the wastes of people, animals and agriculture are properly digested, enough fuel can be produced at relatively little cost to meet all present consumption needs while cutting considerably the problem of sewage and animal waste disposal, and preventing the massive health pollution problems for which there are no easy or cheap solutions.

Yet so many countries are limited in their economic development because of fuel shortage or are plagued by diseases caused by insanitary disposal of wastes; and the proper treatment and utilisation of such wastes can be an important factor in improving the nutrition, health, social and economic status of the people.

In India, cattle dung is collected and used for fuel, a messy operation with consequent loss of plant nutrients, but since a decade or so ago there has been an increasing use of digesters to produce methane gas or fuel and the residue for soil fertilisation.

They use the **batch** process which requires large digesters to cater for one to two weeks' supply of wastes, with high production of gas at the start because of the high organic content, and the rate dropping as the organic matter is consumed by the bacteria.

Besides, the storage of wastes outside the digester between batches is not only insanitary but also results in loss of gases that will not be available for subsequent digestion and oxidation into nitrate and sulphate for use as fertiliser.

In Taiwan the **continuous** process allows digesters to be much smaller in size, reducing the capital cost considerably. The fresh wastes are fed into the digester two or three times a day, keeping animal houses clean, odourless and free from flies, and maintaining the prolific growth of anaerobic bacteria to produce a steady and high production of methane gas all the time.

Moreover, the nitrogen content in the wastes is retained in the system for fertilising purposes.

Digesters used in many countries use either of these processes, but in my design I have further reduced the capacity, using the well-known phenomen of 60 to 70 per cent reduction of fresh wastes within 24 hours in septic tanks and similar sewage treatment processes, with the rate decreasing after that, and the equally well-known one about increasing the rate of loading as the tank size increases.

As fresh wastes are available every day from every animal, completely free of charge, there is no advantage in keeping the partly digested waste inside a bigger digester.

However, another 24 hours' retention in a cheaper tank or pipe is allowed for more settling of suspended matter and possibly parasites, and some further digestion of organic matter, even if it is at a lower rate, to improve the effluent quality.

To complete the whole purification process, oxidation ponds follow.

One interesting development as a result of extensive research in India is the fact that gas production rate can be increased by having a Carbon/Nitrogen ratio that is higher than what is naturally obtained in animal wastes, with the optimum between 30 and 35-to-one.

This is achieved by addition of ground grass, leaf or straw which contains a high proportion of carbon. For example, the addition of 2lb of dried straw powder to the digester can increase gas production per head of cattle by at least 75 per cent.

The digester will require more frequent desludging because of the higher non-biodegradable content of the straw, but this is a simple and quick operation and is worth doing for the extra amount of fuel obtained, particularly if it is required for small industries.

The digester gas contains two-thirds methane (CH4) and one-third carbon dioxide, with a trace of hydrogen sulphide. The calorific value is between 650 and 700 BThU per cubic feet, which is much higher than coal gas, besides being much safer. The gas can be used for cooking, lighting, heating, refrigeration and for generating electricity for industrial purposes.

Digester:

The digester is the principal part of the water-waste-fuel-food cycle.

Its functions are:

- **Isolation** of wastes and odours to prevent them from causing nuisance or pollution;
- **Settling** of organic matter that is decomposed by anaerobic bacteria;
- **Conversion** of grass of decomposition into final products of **methane,** which is combustible and has a high calorific value, and carbon dioxide, which is odourless; and
- **Stabilisation** of the settled solids into **humus,** which is a dark matter with little or no odour and used for physical fertility of the soil.

The digester allows retention of the wastes for 24 hours under quiescent, anaerobic conditions. About 69 per cent of the suspended solids will settle, and decomposition of the organic matter by bacteria will reduce the volume and change its characteristics considerably.

Gases are formed, 60 to 70 per cent being methane, and can be stored if a gas cover with a water and oil seal is fitted to the digester (sump oil is used to prevent evaporation of water from the gas seal).

Painting of the gas cover in black allows the maximum solar energy to be absorbed and heat the anaerobic liquid inside to activate the digestion. At the same time, pathogenic organisms are greatly destroyed.

The only way the digester can function properly is to discharge into it a fresh load of waste every day. So it means the scheme can only work if pig and/or chicken farming is done to provide the wastes which, together with natural bacteria, natural plant life and the elements in the air (oxygen, nitrogen and carbon dioxide) are the raw materials for our present project.

The pig pen and chicken house should have concrete floor and plastic drain respectively, so that the wastes can be easily washed into the digester. The objection that can be raised by the traditional farmer to fencing the animals in is that he will have to find or buy feed for them. So this feed should be produced at little or no cost in the same scheme (by using algae ponds).

As with other domestic gas, methane should be treated with due respect. When it burns it combines with oxygen to form carbon dioxide which should be allowed to escape through open windows.

For intermittent use of the gas, as in cooking and boiling water, it can be used directly. But for continuous use, as in refrigeration, or even lighting, it is better to use the gas to run an electric generator outside the building.

It is perhaps worth noting that the digester gas, with as high as 30 per cent carbon dioxide, is safer than ordinary town gas which contains 9 per cent carbon monoxide that is lethal. **But we should always remember that air containing between 5 and 15 per cent methane is explosive; so there should be no naked light when any repair is being made to the digester.**

A 300 gallon digester, used to power the gas-ring, refrigerator and lamp at right.

Fuel:

For cooking purposes the collection of dry firewood is time-consuming, and the purchase of kerosene is costly. Then, for many generations to come, there will not be the slightest chance for rural communities to have an electricity supply. So it is not difficult to imagine what a big difference it will make to the standard of living of a family in a village or remote island with such a convenient source of free fuel for domestic purposes.

To produce enough gas for cooking, lighting and refrigeration, there should be at least five pigs per person. So the 300-gallon digester can cater for all the needs of a family of six.

If more gas is required for other purposes, such as small cottage industries, more pigs and chickens can be bred. Since most of the feed is provided by the animals themselves, this should not be difficult to do in a country like Papua New Guinea.

The calorific value of the gas is about 6000 calories per cubic metre, which is equivalent to 2.2 kilowatt hours of electrical energy, 1.4kg of charcoal, or 0.8 litres of petrol. On the average, three pigs can produce one cubic metre of gas per day.

For example, the daily consumption of gas for a family of six is as follows:

• Cooking	2 cubic metres gas	6 pigs' waste
• Lighting	5 cubic metres gas	15 pigs' waste
• Refrigeration	3 cubic metres gas	9 pigs' waste

Cost benefits:

For a small farm with about 30 pigs and the same number of chickens, a 300-gallon digester will be adequate. In Papua New Guinea it costs about $400. The pig pen and chicken house are built with local materials except for the floor and drain.

For bigger farms, digester units of 1000 gallons are used. Each unit can cater for 100 to 120 pigs and the same number of chickens, and they are used in parallel to take care of the wastes of any number of animals. Each unit, prefabricated in fibreglass, together with settling pipes, costs about $600.

Public health:

Disposal of both animal and human wastes is a serious public health problem, responsible directly or indirectly for many preventable diseases among rural populations in most parts of the world.

Quite frequently, this problem is conveniently ignored, to be left to nature, and in some cases the disposal of the wastes is a mere afterthought, more often without the proper knowledge of the principles of waste treatment. Sometimes the wastes are just transferred from one place to another, but they come back in the form of polluted air, food, water, sea and soil.

Sanitary waste disposal can be a very expensive and complex proposition, especially when complicated equipment is imported for this purpose. In the tropics, where nature has kindly put the sun, warmth and all the prolific plant and animal organisms at our disposal, we should make use of these climatic advantages to deal with our wastes economically.

In the present system, not only do we isolate both human and animal wastes in a sanitary manner instead of allowing them to propagate diseases, but we make waste disposal pay!

mother's methane

The Mother Earth News, published bi-monthly in the United States, has been tracking down the facts on methane generation and gas car engine power for a couple of years now.

This interest wasn't just on paper, either. Publisher John Shuttleworth eventually had a methane digester designed by Ram Bux Singh installed at his parents' farm.

There were some teething troubles, but we're pleased to say the Mother digester is working and gurgling, so more news and experiments can be expected. Meanwhile all the following articles which have appeared in TMEN make good introductory reading for everyone interested.

METHANE DIGESTION

Solution to Pollution, Now ... electricity from manure gases, How to generate power from garbage, The Mother Earth News No 3 (May 1970) — Plans for digesters, R. P. Howard sewage disposal system.

Plowboy Interview, Ram Bux Singh, TMEN No 18 (November 1972) — the Gobar gas expert from India on bio-gas production. Photos of Mother's Methane Maker.

Plowboy Interview, L. John Fry, TMEN No 23 (September 1973) — details of Mr Fry's South African pig power plant.

GAS CAR POWER

The marvellous chicken-powered motor car, TMEN No 10 (July 1971) — about Harold Bate.

Convert your car to propane, Jerry Friedberg, TMEN No 15 (May 1972) — car conversion using Friedberg's own $US65.00 kit for V8 engines.

Prices of these back issues are No 3, $1.00; 10, $1.35; 15, $1.35; No 18, $1.50; No 23, $1.35. All prices in US currency from Box 70, Hendersonville, North Carolina 28739, USA.

Before attempting to build your own methane digester we suggest you find out as much as you can about the practical aspects by reading what Ram Bux Singh and L. John Fry have to say about their experiences.

Since 1955 Ram Bux Singh has been directing experiments aimed at simplifying the construction of bio-gas digesters at the Gobar Gas Research Station at Ajitmal in northern India.

The low-cost digesters he has developed work on the batch feeding system and utilise gobar (Hindi for cow dung). So far 200 have been installed in villages and on farms.

Literature available: Some Experiments with Bio-Gas and Bio-Gas Plant, Generating Methane from Organic Wastes. Price $US5.00 from: Ral-Jin Farm, Benson, Vermont 05731, USA or Gobar Gas Research Station, Ajitmal, Etawah (UP), India.

L. John Fry, an Englishman, built a large digester with a capacity of two tons per day of pig manure at his 1000 head pig farm in South Africa in 1958.

The methane was used to run a water pump and a 6 kilowatt electric generator and worked continuously for six years.

Now living in the United States, Fry has collaborated with the New Alchemy Institute West to produce a booklet outlining designs for simple anaerobic digesters, including a horizontal model he calls a "displacement digester".

Details: Methane Digesters: Background and Biology; Using The Gas and Sludge; Designs for Simple, Working Models, L. John Fry and Richard Merrill, 44 pp. Price $US3.00 from New Alchemy Institute West, 15 W Anapamu Street, Santa Barbara, California 93101, USA.

KEY

Bill's Health Foods, at 62 Pulteney Street, Adelaide, is a family business run by Bill and Betty Williams, which specialises in food for vegetarians as well as the usual health food lines.

These include garden salads, home-made fruit salads, potato, cheese and vegetable burgers or rissoles, fruit slices, pies, rock buns, scones and a wide range of fruit juices.

Another speciality is wholemeal rolls and sandwiches made from bread which has no animal fat or artificial accelerators. Eat there, or take the food away to the park. Hours are 7.45 am to 6 pm Monday to Thursday, with 4 pm closing on Fridays.

Additions to listings since EG7:

EATING OUT

SYDNEY: Commonweal Centre Restaurant, 1st floor, St James Chambers, 114-120 Castlereagh Street. Salads, soups, stoneground bread, smorgasbord.

AUCKLAND: Prana Whole Foods, 41 Victoria Street, West Auckland. Vegetarian meals.

ORGANIC PRODUCE
NEW ZEALAND

AUCKLAND: M. Chhima, Hauraki Fruit Shop, 337 Lake Road, Takapuna. Compost-grown and unsprayed fruit in season.

CHRISTCHURCH: Natural Foods, 808 Colombo Street, Organic vegetables, honey, stoneground flour.

NELSON: Health Food & Herbal Shop, 71 Collingwood Street. Honey, vegetables, grains.

SYDNEY: Balmain Health Foods, 281 Darling Street, Balmain. Organic fruit and vegetables when available. Biogleam etc.

"I have loads of (unspun) coloured wool if anyone needs it," writes Mrs Cicely Fenton of "Lanark", Branxholme, Victoria, 3302.

This year Mrs Fenton had 135 black sheep shorn — a fact which did not escape the notice of the local newspaper, the Hamilton Spectator. She says the wool available is "mostly Merino, but all colours from black to beautiful soft greys," but the crossbred wool has been taken already by eager weavers from Adelaide.

For details of prices and supply drop a stamped envelope to Mrs Fenton.

The Australian Retired Persons Association (ARPA) is an organisation for older people in Victoria. It has a garden club, handcraft section and its own nursery, run by horticulturist Geoff A. Echberg (pictured).

The garden club meets monthly and there are outings, film nights, talks and visits to nurseries. Plants may be bought or exchanged at the ARPA Nursery at 604 Nepean Highway, East Brighton.

Annual subscription is $3.00. For further information about the Garden Club, contact the Secretary, Rupert Barnes, 4 Panorama Street, Clayton, Victoria, 3168. Tel: 544 5304.

Ag Bureau

The Agricultural Bureau of New South Wales is a group of farmers, graziers, dairy farmers, orchardists, part-time farmers and hobby farmers, with members throughout the State.

Membership is $2.00 yearly and the aims of the Bureau are the promotion of rural education, particularly in agriculture, and of rural productivity, efficiency and improved standards of living.

If you have, say 25 acres, or more, and you are seeking the best ways to farm your land, membership of the Bureau would be very useful. For those based in the city a Sydney branch has recently been established.

Plans are for regular meetings with guest speakers, schools, courses and seminars on subjects which most interest members, such as "Getting Started in Farming".

The Department of Agriculture provides staff and financial support to the Agricultural Bureau of NSW. If you are interested in joining, get in touch with Paul Brady, Extension Officer, by telephoning 2 0536, ext 4222 or write to: The Division of Extension Services, NSW Department of Agriculture, State Office Block, Phillip Street, Sydney, 2000.

Other States have similar organisations. Enquire at your local Agricultural Department.

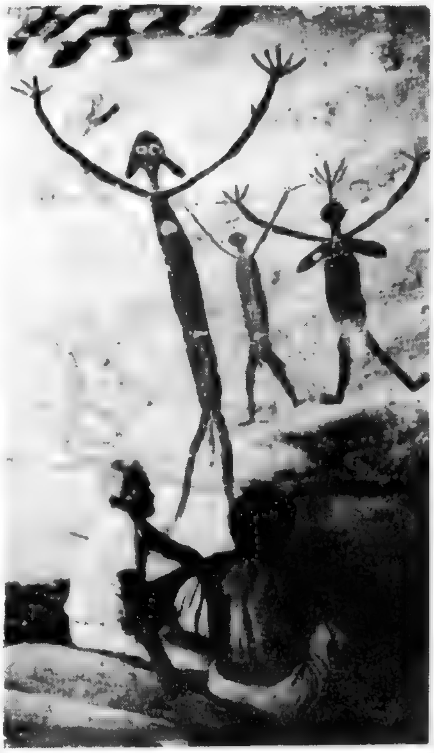
QUINKAN

In Cape York Peninsula, 70 miles west of Cooktown, lies a 300 square mile area of native flora and fauna which is the proposed site for the Quinkan National Park.

Here, in rugged sandstone country and forest wilderness, are several hundred galleries of Aboriginal paintings, both sacred and secular, providing a visible history stretching back to prehistoric times. Much of it is unexplored.

Disturbed by a lack of government action, two groups, The Cape York Conservation Council and The Aborigines Historic Places Trust have combined to raise $65,000 to purchase the area from the present owners, Crocodile Station.

Money is needed to buy the land, $5.00 will pay for 15 acres. Donations and enquiries to: Quinkan National Park Appeal, PO Box 33, Gordonvale, Queensland, 4865.



earth people write:

Dear EG,

I thought readers might be interested in some of the courses which the Council of Adult Education in Victoria is running this year.

Among the many day and evening classes offered are various crafts, beekeeping, and organic gardening. Courses are at city and suburban centres and start in March and September. A free syllabus which contains details of all classes can be obtained from the CAE, 256 Flinders Street, Melbourne (Tel: 63 4231).

Yours sincerely, Jill O'Halloran, The Patch, Victoria.

Dear Earth Garden Folks,

I was really impressed by the wealth of information your magazine contains. As a newcomer to this country I was dismayed that people in Australia, in general, seem to have no interest in what becomes of this beautiful land.

As a result, I fear, the country will turn into another United States: overdeveloped and polluted by people and the paraphernalia that always seems to accompany "civilisation".

Happily there is so much more open space here that there is still plenty of room to move for people more inclined to the welfare of their earth. Hope your magazine contributes to a change of attitude in Australia, making people aware of other ways of living.

Ron Smith, Ballina, New South Wales.

Dear Folks,

Since I am a little removed from Australian news-stands, it is difficult to pick up the latest (or even earliest) edition of EARTH GARDEN. I did, however, find EG2 on the shelf of the clubhouse reading room here on the kibbutz. It has given me a taste for more.

I enjoy reading about farming. I am a vegetarian and into healthy foods. But at the moment I am somewhat removed from the actual experience. The momentum to rush down to Haifa, buy up a bunch of seeds, and start sowing them in a corner of the pear orchards is building nicely to a peak. However, the growing season (for the things I most like to eat) is already well past planting time. Alas, there is too much to learn. The best I can do is start preparing soil in a plot for next spring's sowing.

My mate is from Australia. We've only just come together, and we're now talking about finding a farm and friends. The only question is — where? Since we're in Israel we may as well explore the possibilities here. Kibbutz is definitely not the way. The kibbutz which tried to convert to organic growing got laughed out of business. Our fruit crops are all chemically controlled.

Some of us would like to start a little business with some kind of artsy craft, but we seem to have no experts among our members and we just don't know how to start such a business and make it economically self-sufficient. We certainly don't have enough jobs to go around, and it is the women in particular who suffer.

We enjoy your mag very much, and would like to read more. I particularly like the recipes, since I am often the cook . . . we are about 70 members, sometimes two-thirds eat vegetarian.

Ah, it's a nice trip you're on, I could envy.

Much love and encouragement, Satina and Yomi, Kibbutz Adamit, DN Western Galilee, Israel.

Dear Folks,

I am writing as director-co-ordinator of the Blue Mountains Community (free) School. We start tomorrow (January 30), with 13 children, five-to-12-year-olds. First project of six weeks to six months will be "survival skills": making our own clothes, growing and preparing our own foods, building cubby houses, play structures and models (to start with) of more ambitious things like domes.

It is my job to assess what the needs of individual kids are and to find the relevant skills-knowledge-energy amongst the parents and friends at the school.

A whole library of EARTH GARDEN will prove most useful.

And . . . have you any hints on how to sprout sunflower seeds without having the hassle of removing the outer husk by hand when the time comes to munch 'em?

Thank you for your publication, George Charlton, Springwood, NSW.

Best wishes from us both for the school, George . . . hope all goes well. Regarding sunflower seeds: these are ready to eat as soon as the shoots are visible (2-3 days). When they're ready, place them in a deep container of water and shake it up. Most of the husks will separate and float to the top, where they can be skimmed off.

Dear People,

A few ideas for supplementing one's compost supply:

Greengrocers usually collect all their carrot tops, cabbage leaves, bad fruits, etc in boxes until the end of the week, when they have to dump it. They are often very glad to dump it in your compost bins for you if you live closer to them than the tip.

Butchers sweep up their sawdust every few days and dump it, same with bones and fat, etc, although with all the smashing of bones necessary, that may not be worthwhile. Also you have to provide transport for this.

Good luck, John Harland, Caulfield, Victoria.

Dear Irene and Keith,

Your magazine should be banned, burned, destroyed . . . Why? It stirs up old, old thoughts that we maladjusted city dwellers have long since successfully supressed: those months of fields and trees and grasses and flowers and . . . then we drifted to the city, changed countries, established ourselves in the world of "bigger and better", which was, after all, the right thing to do anyway, wasn't it?

But the rot set in, for now we live away from the city as such, but still must commute 40 miles a day, and having embraced vegetarianism completely the downfall is nearly complete. Just an acreage within our tight pockets' reach would send us over the brink and believe me, we're looking, my oath we are.

I get so involved with reasons if I go on, but there doesn't have to be a reason really. If it's "good" for us that's enough. You smile and you know!

Peace and love, Paul Moriarty, Cleveland, Queensland.

Dear friends,

You have shown a positive and beautiful alternative to rediscover the art of living.

EARTH GARDEN has given us encouragement with every new issue and we are selfishly sorry to hear that you are breaking up after issue No 10.

Enjoy your holidays! Peace and Joy, Desley and Ingo Guthmann, Cessnock, NSW.

Land Lines

Anyone that was interested in Bill and Vanessa Hankins' letter in EG7 and their plans for a community of SRF followers (we have recently learned of their temporary inability to continue with these plans) might like to know that we have started just such a community in the Barossa Valley at Angaston.

Our property consists of 100 acres fertile farm land, a large, nine-room stone house, barn, stables, old stone cottage (usable if restored) and various sheds. The aims and ideals are patterned after those of Ananda Farm in America (read Swami Kriyananda's book Co-operative Communities, How to Start Them and Why for details).

Membership will be open to members of Self-Realization Fellowship, who share our love of God, Gurus and joyful service. We are striving for self-sufficiency and self-realization in the company of dedicated spiritual companions.

Write: Ananda Farm, PO Box 22, Angaston, South Australia 5353.

Have 60 overgrown acres on highway some miles north of Innisfail. Idea being to put up necessary fencing and shelter and plant some fruit trees during leave.

Unfortunately it may take several years to drag myself from the "mire", and would need a voluntary caretaker to stop the "evaporation" and destruction of these.

Maybe someone (or two) would like to fill the role while trying to find their own plot and practice gardening. Please no drugs or illegal activities, and no interference with the echidnas, snakes and the surrounding rain forest.

Write: Len Hansen, PO Box 471, Mount Isa, Queensland, 4825.

We wonder whether there may be someone who could help us build a log cabin — someone who would welcome the opportunity to live, work and earn in beautiful surroundings, free of hassles?

Barry and Ulla Griffiths, Mt Royal, via Carrow Brook, NSW, 2330.

Dingley Dell, the cottage home of poet Adam Lindsay Gordon (1833-1870), 16 miles south of Mount Gambier, South Australia, is closed, decaying and empty.

The Department of Environment and Conservation in Adelaide which is in charge of the cottage (pictured), which contains a museum of the poet's papers and horse-riding gear, claims it cannot find a caretaker.

The National Trust of SA has offered three caretakers but has heard nothing from the Department. Sounds like an opportunity for our South Australian readers.

Peter McArthur of Seldson Park, SA, who told us about the plight of Dingley Dell, says he has been deluged with enquiries about his "squatters cottage" mentioned in last issue's Land Lines. "I think the first applicants are going to try it, but nothing final has come through," he says. So, please don't write, you're too late!

I'm looking for some people who would be interested in joint-buying some land around Canberra. They may or may not be interested in setting up a communal thing, just as long as they respect the earth. I have a couple of thousand and want to spend it before it depreciates any more, but don't wish to get involved with the friendly neighbourhood finance company.

Anyone interested would have Buckley's chance of finding me at home, so please write to me at PO 957 Canberra City, ACT, 2601.

Yours with best wishes and love, Richard Murphy.

I'm a 24-year-old ex-Teachers College student wishing to learn organic vegetable growing. I am seeking work with an experienced market gardener, or orchardist/vegetable grower (preferably Bio-dynamic), in any State. I have been working an organic home vegetable garden over the past 12 months, and have worked on both my uncles' wheat and sheep properties and other farms over the years. At present I'm fruit-picking on an organic raspberry and apple orchard at Forest Range, South Australia.

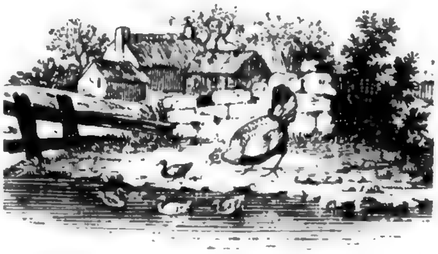
Brian Liddle, 52 Derlanger Avenue, Nailsworth, SA 5083.

I would like to lease 400 acres of fair to coarse granite, near Armidale, New South Wales, of which about 100 acres is arable, 80 acres hills and the remainder grazing. Ample water and good fences. The two-bedroom house has no electricity connected, but I am prepared to buy a generator for the lessee. It is unfurnished, but has a slow combustion stove (with hot water).

Rental would be $20-$25 weekly. Any improvements over the period of the lease would be considered for reimbursement. It would be ideal for a family considering buying a farm but wanting to see what country life is like before buying their own.

I would require a bond and certain conditions must be agreed on by the tenant. There is also old but serviceable farm equipment and sheds.

Yours faithfully, David Phillips, 24 Faulkner Street, Armidale, NSW, 2350.

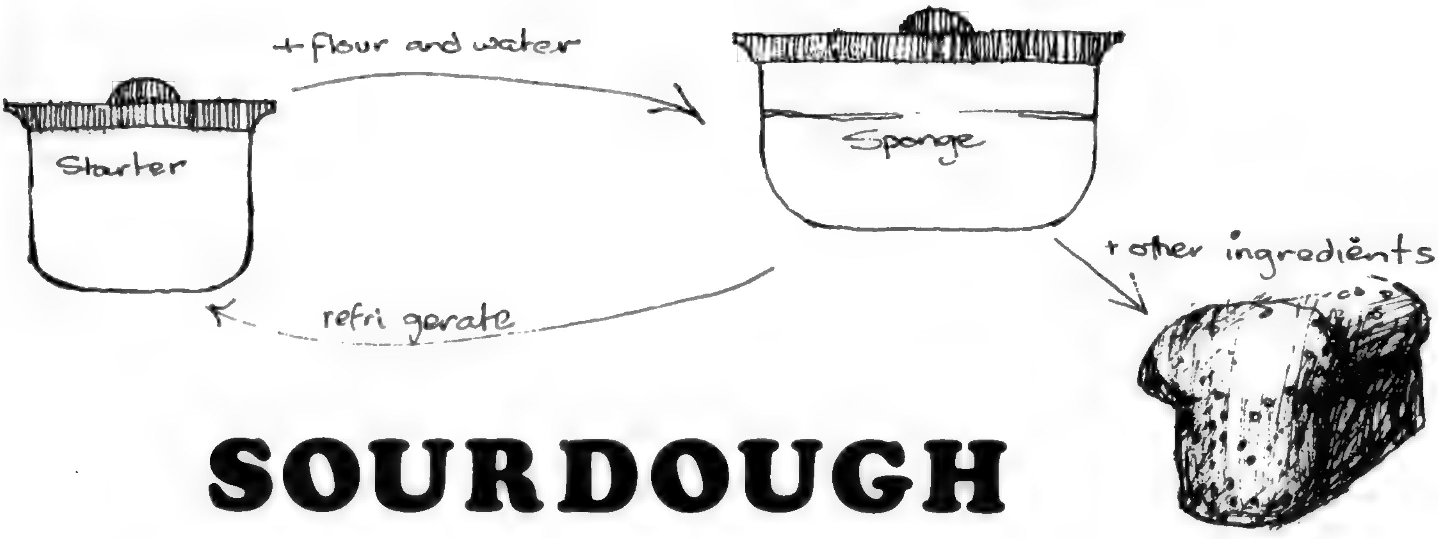


Countryside and Small Stock Journal, ten times a year, 63 pages. Subscription $US6.20 yearly from Rt1, Box 239, Waterloo, Wisconsin 53594, USA.

Countryside is a folksy American magazine, covering mainly goats and rabbit raising, but, as its name implies, touching on many other issues of country living, like tanning, organic gardening, farming, cooking, raising fowls, making farm equipment, veterinary advice, grains and so on.

One of the most appealing features is the letters from readers who outline problems, solve problems and detail useful hints and information. We would say goat-lovers would learn a lot from any issue. It's just as well to point out, however, that backyard rabbit raising is against the law here in Australia.

Editor-publisher Jerry Belanger sometimes gets quite philosophical in his regular column "Beyond the Sidewalks", which reports on events at his homestead where the magazine is put together. Very good value.



SOURDOUGH

BY JANET THROOP

Using sourdough is an interesting process which yields healthful, firm bread with a distinctive flavour unobtainable by other means.

This article is written to show that making sourdough bread need not be more time consuming than making other kneaded breads. With refrigeration, the "starter" can be saved and used only every few weeks.

I first read of sourdough as being a staple for the Canadian and Alaskan gold prospectors who had no access to fresh yeast. My method of breadmaking includes some fresh yeast, which speeds up the process considerably.

Since keeping a pot of sourdough is actually growing your own yeast, it is helpful to know something about yeast. Yeast is a one-celled organism which obtains its energy by the process of alcoholic fermentation. Sugar is broken down by yeast to provide energy, plus the waste products carbon dioxide and alcohol.

When in a warm, moist environment with sufficient sugar, yeast grows rapidly. In breadmaking, carbon dioxide bubbles provide the leavening power; alcohol produced by fermentation is driven off during baking.

Most bread recipes call for some form of sugar as yeast "food". However, in natural grains there are present enzymes which split starch into sugar. In maintaining a sourdough pot as described below, sugar is not added since it can be produced naturally when fresh, whole grain flour is used.

Sourdough is a flour and water dough in which yeast has been fermenting for several days or more — rather than the several hours of traditional breadmaking. Being a runny mixture, it is kept in a pot. Alcohol, a by product of fermentation, accumulates in the pot; and some of it is broken down further into acids.

Accumulation of these alcohols and acids changes the dough into a thin batter with a distinctive sour odour. Growth of the yeast eventually stops unless fresh flour and water are added. Yeast from the sourdough pot can be used to leaven breads just as dry or compressed yeast does; extra flavour comes from the accumulated acids and alcohols.

You may start a pot of sourdough as the oldtimers did by merely mixing equal quantities of flour and water and allowing the mixture to stand open in a warm place for several days. If you are lucky, yeast reproductive spores present in the air will find your pot an attractive place in which to grow. However, there are many strains of yeast, and some have poor rising power and disagreeable flavours.

An Arizona friend successfully started a sourdough culture from scratch and shared a bit of the starter with me in the true pioneer fashion. I used it for months but was never able to revive it after drying it to make a slow journey to Australia.

For practical purposes, commercial yeast is satisfactory for beginning a sourdough pot, and one need not fear losing the culture for it can readily be started again wherever commercial yeasts are available.

Sourdough can be used to leaven almost any kind of baked goods. In breads carbon dioxide bubbles trapped in the gluten (formed by kneading) cause the bread to rise.

In pancakes, scones, cakes and biscuits, baking soda is added to the batter. In such cases the acids in the sourdough react rapidly with the baking soda, producing carbon dioxide bubbles. The soda reaction takes place in the bowl and also during baking. The batter is sweetened somewhat because the soda neutralizes some of the acid.

Directions follow for making "starter" sourdough yeast culture, "sponge" to provide yeast for baking and replenishing the starter in your sourdough pot, then recipes for bread and pancakes.

SOURDOUGH STARTER
(using commercial yeast)

½ oz compressed yeast or a corresponding amount dry yeast
½ cup warm water
¾ cup whole meal wheat flour

Choose a container with a capacity of about 2 cups. The jar or pot can be glass, plastic, crockery, enamel or stainless and should have a lid. Do NOT use metal which will be affected by acids.

Dissolve yeast in warm water. Mix in flour. Cover and leave in warm spot 2-4 days. (Optimum temperature for fermentation 80 deg). Starter should bubble and become more runny, with liquid often rising to top. When a tangy fragrance has developed the starter is ready to be made into sponge for bread or pancakes.

SPONGE — to be prepared from starter the evening before you wish to bake.

2 cups warm water
2½ cups wholemeal wheat flour
starter from your sourdough pot (approximately 1 cup but there is no need to measure)

Mix ingredients in a non-metal container large enough for doubling. Cover and let stand in warm place 8 hours or overnight.

The next morning stir sponge, put 1 cup of it into clean sourdough pot, and refrigerate the starter until you wish to use it again. Starter can be stored successfully for 3-4 weeks in refrigerator. Liquid will rise to the top and may be dark, but you merely stir and add more flour and water to make a new sponge.

If at some time the starter becomes extremely sour, use just a small part of it in making your new sponge — throw the rest away. The other alternative is to begin a new starter culture, which should be no problem in most parts of the world.

After reserving 1 cup, the rest of the sponge is used for baking.

PUMPERNICKEL BREAD — makes 3 large loaves.

½ cup warm water
1 tablespoon crude molasses
½-1 oz fresh yeast. (More yeast yields a lighter, sweeter bread which rises more quickly. All fresh yeast can be eliminated, but I become impatient and the very dense loaves tend to be more sour than I like).

Mix above ingredients and allow to stand in warm place until active (10 minutes).

Sponge (except for 1 cup already removed)
2 cups warm water
2 tablespoons cooking oil
2 teaspoons salt
1 tablespoon caraway seeds
1 cup skim milk powder
3 cups wholemeal wheat flour
4 cups rye flour
4 cups white flour

Combine yeast mixture, sponge, warm water, oil, salt, caraway, and milk powder. Add enough of the flours to make a dough. Knead on floured board until elastic and smooth, adding flour as necessary. Place in greased bowl. Cover and allow to rise until double or almost double (2-4 hours depending on amount of fresh yeast used and condition of the sponge).

When doubled, punch down, turn out on floured board, and add more flour if dough has become too soft. Shape into loaves. Let rise until double or almost double (about half the time of first rising). Bake at 375 deg F for 45-50 minutes.

Variations: Use other flour or combinations of flours. Keep in mind that 100 per cent wholemeal will be heavier so that you may desire the addition of more fresh yeast. Add cracked wheat, sunflower seeds, poppy seeds, sesame seeds or non-fermenting yeast, and have fun creating your own variety. Addition of fresh yeast tends to "sweeten" the dough.

Some experimenting may be necessary the first several times since the activity and concentration of your sourdough starter is dependent upon the temperature at which it is stored and grown.

SOURDOUGH PANCAKES — serves 4

My favourite sourdough recipe requiring soda is for pancakes. Pancakes are traditional breakfast for many North Americans. However, there is no reason they cannot be varied and served for other meals.

In the evening (or 8 hours before pancakes are to be served) make 1 recipe of sponge. The next morning take out 1 cup for your sourdough pot and refrigerate. To the rest of the sponge add, then beat thoroughly:

1 egg
2 tablespoons cooking oil
¼ cup milk

In a small cup combine, eliminating any lumps:

1 teaspoon salt
1 teaspoon baking soda
2 dessertspoons sugar

Sprinkle evenly over top of the batter then fold in gently.

Pour spoonfuls of batter on a lightly greased frypan or griddle (batter should sizzle as you drop it on the pan, otherwise the griddle is not hot enough). If batter is too thick to pour, it can be thinned with extra milk. Turn pancakes when dry bubbles have formed and pancakes are nicely browned on the first side. Serve hot with butter and topping.

SERVING SUGGESTIONS

Warm maple syrup is the traditional topping. Other toppings to try are: honey, golden syrup, fruit sauces, yoghurt mixed with fruit or preserves, meat sauces. Chopped fruit, nuts, or crumbled bacon may be included in the batter.

POTATO STARTER

Quite a few readers have asked us about potato starter, a rising agent which is an alternative to yeast.

In such cases we consult our favourite book and kitchen companion, The Natural Foods Cookbook, by Beatrice Trum Hunter. It's a Pyramid Book, published in New York in 1961, 368pp and a paperback. Here is her recipe:

Home-grown yeast may be used as a starter from one baking to the next. This mixture is sometimes called a sponge or ferment.

LIQUID YEAST
¾ lb raw potatoes
1¼ cups boiling water
¼ cup honey
1½ tablespoons salt
1½ cups cold water (approx)
1 cup 'starter' or 1 tablespoon dried yeast soaked in cup of lukewarm water.

Choose sound, clean potatoes. Pare and cube. Place in pot with boiling water. Cover and simmer until tender. Remove from heat. Puree potatoes and blend with potato water, honey, salt and enough cold water to make 3¼ cups of liquid. Cool mixture to lukewarm (82 deg F).

Add starter reserved from last baking or dried yeast soaked in water. Allow mixture to stand overnight.

The following morning, stir and reserve one cup as starter for the next baking. Store starter in clean, scalded, loosely-covered jar and keep in a cool place.

Do not allow to freeze. Use remainder for soft wheat-flour bread dough. Should the mixture develop any unusual appearance or odour, discard.

more letters

Dear Irene and Keith,

While reading the book, Household Ecology (reviewed in EG7) I remembered an article in EG4 (page 29) on Bio-dynamics and fruit trees. What drew my attention was the section in Household Ecology dealing with the use of copper nails hammered into trees to kill borers. The book indicates that the method should not be used with fruit trees, since the copper eventually enters the fruit and could cause illness in those people eating the fruit.

Your article mentions the use of copper triangles hammered into fruit trees. It seems it may not be such a good idea if you want to eat the fruit. Perhaps someone has more information on this?

Peace on earth, Laurie O'Donnell, Wahroonga, NSW.

Dear Keith and Irene,

Husband Bob and I and baby son have just moved into our own place, about 43 miles east of Melbourne. We only have 1/2-acre, but a good number and variety of fruit trees and chook sheds and plenty of room for vegetables.

Bob has a beaut big workshop and I have a room for spinning and weaving — which makes room for another loom or two!

We hope to be as self-supporting as possible and get our cost of living down even lower than at present, but there is so much to do, one doesn't know where to start. The house needs quite a bit of work done to it before we start outside. Still, it is good to be out of the city and we are in a beautiful spot.

Keep up the good work.

Yours sincerely, Sue Brooks, Yarra Junction, Victoria.

Dear Keith and Irene,

Many thanks for the requested copy of EARTH GARDEN, which I found absorbing and informative with its many articles about the simple "down-to-earth" things I love. There was about the articles a quality and substance often lacking in the fragmentary material found in present-day magazines.

As a countrywoman living in an area in which the land is ruthlessly exploited by those who care little for the health of the soil, it is gratifying to read that there are still some people who regard the soil as a vibrant, living thing to be nurtured, and not merely as an inanimate mass to be beaten into submission.

Yours faithfully, Beulah Jarman, Forth, Tasmania.

Dear Keith and Irene,

Item of possible relevance ... there is an interesting booklet published by the Fauna Protection panel, 167 Kent Street, Sydney, entitled, Wildlife Refuge Booklet No 3. It shows how an individual can have his or her property declared a Wildlife Refuge. They have an extensive list of other publications too.

All the best, Kerry Hennessy, Wallerawang, NSW.

Dear Keith and Irene,

Don't be discouraged. Good gardening takes time. Soil isn't made in a day, but it's amazing how fast it improves with an Earth Gardener at the helm.

My two town blocks had no trees and about three inches of awful soil over pure grey sand, and a very low rainfall. I'm not too proud to bring home everything — seaweed, lawn cutting — and to visit the local dump ... you'd be surprised what marvellous things people throw away.

Now, after seven years, I have a full spade of dark, friable soil, with worms, also trees. Being a vegetarian I hardly have to buy any food, just a few extra horrible things like ice-cream and biscuits for a mob of grandchildren.

I think I can beat any sunflower-growers with my 15-inch diameter heads, without petals (weight 6lbs 8oz). To keep birds from eating them, slip over onion bags — get the grocer to save you some.

One thing more, I planted tomatoes, corn and one stray pumpkin seed. The stray had nine huge pumpkins, whereas those planted intentionally had only one or two on each plant!

Lizzie (Earthly Liz) King, Tumby Bay, South Australia.

Dear Earth Garden,

We have just finished buying and reading the first six copies of your most interesting magazine. We have found a tremendous amount in them that is of interest to us and much that provokes further discussion and argument.

We think more should be made of the point put forward by Neil Douglas in his article, that to go and live away from it all demands far more in self-discipline than most people realise. Living close to nature is often more demanding in energy and time than the big city, but inevitably far more rewarding.

One has to become far more self-sufficient both mentally and physically. Nature, like time and tide, waits for no man. We look forward to many more interesting numbers and wish you well in your venture.

Yours, Jennifer Hawkins, Christchurch, New Zealand.

Dear Friends,

We are delighted that a back-to-harmony with nature movement is thriving well and is so widespread as to be represented in all States. We — a four-child married couple-family — are just beginning to learn the art of organic gardening and are grateful for the help of your journal.

Did you know your artist friend Neil Douglas' very, very lovely painting, The Great Australian Presence is hanging in an office of the Victorian Natural Resources Conservation League in Springvale Road, Noble Park, Victoria? Since I was able to view it there, I presume others interested could also. Victorian readers may find an opportunity to enjoy the chance to see Australian landscape through Neil's sensitive eyes.

Thank you for your efforts and may your rewards multiply.

Yours faithfully, Mrs Anna Buckhorn, Balnarring, Victoria.

Dear Friends,

It's hard to describe how surprised and happy I felt when I discovered EARTH GARDEN in our local health shop. This feeling increased as I read it, and discovered the enormous brother and sisterhood of truth-seekers that you are drawing together from all over.

Strange as it sounds, most thinking people would agree that true progress today will have to go "backwards" rather than "forward" in the manner that technology is taking it.

How long before modern science learns that phrases like "subduing Nature" may well prove to be their epitaph? Nature can be so generous to those who endeavour to live according to her laws. This is something that your readers will discover, if they haven't already.

Well — here's looking forward to the next issue.

With sincere regards to all, Glenevie Jensen, North Rockhampton, Queensland.

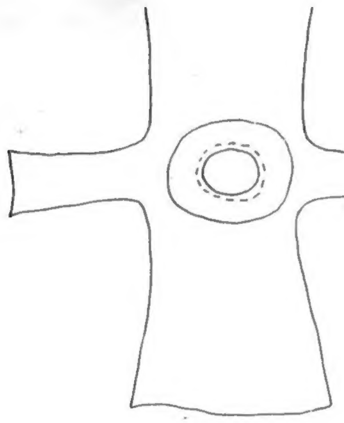
Dear Irene and Keith,

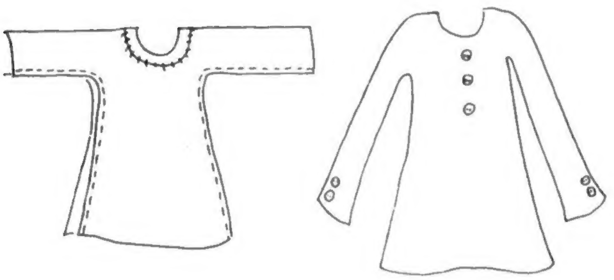
Enclosed please find subscription renewal for two frustrated Earth Gardeners who are living in a semi-detached house on an unbelievably small block of land, almost right on the equator.

However, your magazine is a constant source of inspiration to us, when thinking about our return to Australia at the end of 1974. Plans, ideas, dreams are constantly changing, but both of us are confident that we will be able, at least in part, to follow some of the ideas we have read about.

Keep up the good work!

Yours sincerely, Vin and Susan Reynolds, Singapore.





The Illustrated Hassle-Free Make Your Own Clothes Book, Sharon Rosenberg & Joan Winer, Studio Vista, London, 1973, 154 pp Paperback, $2.85.

I've always wanted to try sewing, but until recently the complex jargon and patterns and mysterious instructions have frightened me off.

Just last week I made a long dress and a smock. I'm pleased with them both and I'm ready to try more. The reason for the breakthrough is The Illustrated Hassle-Free Make Your Own Clothes Book which gave me the confidence and enthusiasm to have a go.

The book really is inspirational! There are no technical phrases or difficult to understand instructions. It contains simple directions to make scarves, belts, toys and bags as well as clothes for both children and adults.

It also shows you how to remake (recycle) old clothes, make your own patterns and use up odd scraps of material.

"We think clothes should feel good — comfortable, sensual," say Sharon and Joan. "We also think they should be easy to make within a relatively short time, fairly inexpensive and groovy to look at.

"Each garment has been broken down step-by-step. Words and illustrations have been coordinated in a simple orderly manner."

Line drawings are clear, detailing the making of clothes like a ten-minute skirt, kaftans, ponchos, a variety of shirts and tops for both men and women, lots of dresses and styles of jeans and pants.

If you do go wrong there is even help on rectifying mistakes.

A final word from the authors: "Men should be able to get over their uptightness about making clothes." Who knows just what this book could begin?

IRENE

EG LIVES!

Dear Friends,

There are a lot of rumours floating around about us and EARTH GARDEN. Some of these have even got back to us.

Some say we've 'gone out of print', that we've 'retired' to Queensland, that there won't be any more EG issues and that there aren't any back issues left. It's even been said that we've left the country!

Well, we're still here . . . and we want to say this . . . EARTH GARDEN LIVES!

Here's EG8 and there will definitely be EG9 (June) and EG10 (September). That will complete the first series.

There will be a break after EG10, but you can be sure that we'll be back 'in print', in some form or other, next year. Whatever happens, we'll let all our subscribers know by mail.

Yes, we still have plenty of copies of all back issues. In fact, they're shoulder-high around the walls here at Balmain, just waiting for orders to come in. To make sure you have the full series, fill in the form opposite for the future and back issues missing from your set.

No, we haven't gone to the country yet (not that we haven't tried). We should be in a position to do something about that after EG10.

We've had so many letters since we told you in EG7 about our plans for a break. Thank you all. Your letters make us feel a bond of friendship between us, because they are all so warm and friendly. We appreciate your understanding and we're touched by your good wishes.

We hope those of you in the north who were hit by the floods were not too badly troubled and that you've managed to clean up by now. Cheer up, things will soon be back to normal.

Don't worry if EG9 doesn't get to you right on time. Our schedule will be delicate, as we're expecting another addition about then — a little Earth Gardener, due at the end of May.

Peace and love,
Keith and Irene

GAS POWER will be continued in EARTH GARDEN No 9, out in June. We look into the pros and cons of LP gas car conversions, prices, performance, kits and suppliers. Other features are organic farming techniques, craft, more on pigs and biological controls.

Held over from this issue are a few book reviews we hope to squeeze in. Also a story on stone building, based on the Flagg mosaic rubble method. To augment this, we'd like to hear from anyone who has built with stone and would like to share their experiences.

So far...

EARTH GARDEN No 1
MOVE OUT ... A GAS TRUCK ... BACKYARD FARM ... OUR LIFE ON KIBBUTZ ... MELBOURNE'S MONTSALVAT ... NATURAL GROWING ... COMPOST & MULCH ... NO DIG ... GROW BEAN SHOOTS ... A GARDEN OF HERBS ... COMFREY, THE MIRACLE PLANT ... FRED ROBINSON ... MUSHROOMS.

EARTH GARDEN No 2
NEIL DOUGLAS AND THE ART OF GARDENING ... BUSH FORAGING ... START A GARDEN ... THE RODALE WAY ... NICOTINE SPRAY ... WHOLEFOOD SOURCES ... LIVING THE GOOD LIFE ... STONE & PAPER MULCHING ... HYDROPONICS ... THE KEYLINE FARMS ... THE CITY FOREST ... WHAT'S WRONG WITH FOOD ... WHAT TO DO ABOUT IT.

EARTH GARDEN No 3
MAGIC HERBS ... COMPOSTING ... BUILD A COMPOST BOX ... GARLIC SPRAY ... FAST FERTILISER ... NINE PAGES ON GOATS & HOW TO KEEP THEM ... MICHAEL BODDY'S TALE OF A DOE NAMED ANNABELLE ... COMPANION PLANTS FOR THE GARDEN ... BUILD WITH MUDBRICKS ... TOM THE DOMEBUILDER ... TEAPOT COMMUNAL FARM ... JEFF'S DOME & WATERWHEEL ... BREAD ... POTTERY & SPINNING ... GLENFIELD FARM.

EARTH GARDEN No 4
SPECIAL BEE ISSUE ... TOUCHING ON HISTORY, BEE-LORE, HONEY, PRACTICAL BEEKEEPING & THE SOURCES ... BACK TO THE LAND IN TASMANIA ... ED'S LIFE OF PEACE ... HYGIENIC COMPOST ... ROBERT RODALE ON THE TRANSITION ... A PURPLE PATCH ... ENZYMES & YOUR FOOD ... BLACK SHEEP ... TANNING AT HOME ... ANDREW'S ICY CANDLES ... THE NAMES OF FLOWERS ... THE GENTLE ASS — TALES OF DONKEYS ... WIZARD DOMEKITS ... WEAVE A WALL HANGING ... SAWDUST.

EARTH GARDEN No 5
SPECIAL WIND ISSUE ... THE WINDS, THEIR ORIGIN & MYTHOLOGY ... WINDMILLS ... AN IDEAL DIET ... FEEDWELL FAMILY'S FUNKY BREAD ... NEIL DOUGLAS ON THE BUSH ... CINVA RAM MUDBRICKS ... ROBBING THE BEES ... GARDEN TOOLS ... FLOWERPOTS ... ORGANIC OUTLOOK ... SURVIVING IN SYDNEY ... SEEDS, TREES & PLANTS ... KEEPING FOWLS ... SAVE THE HAMBURG ... THE VEGAN WAY ... FARMHOUSE KITCHEN ... MOON PLANTING ... GRAIN MILLS ... FALLOUT SHELTER.

EARTH GARDEN No 6
SOLAR I: THE SUN CULTS ... SCIENCE & THE SUN ... A SOLAR COOKER ... MAKE A SUNDIAL ... STONEHENGE ... THE LOST WORLD ... LAND LINES ... CLIFTON PUGH VIEWS THE BUSH ... CEMENT RENDERING ... GONWANA JIGSAW (ONE WORLD ONCE) ... SHALOM: LAND OF PLENTY ... CAJUN COOKIN' ... NATURAL ANIMAL CARE ... TASSAJARA BREAD BOOK ... HEALTHY HORSES ... CRYSTAL HILL ... SPIRIT OF NIMBIN ... BUCKY FULLER ... THE NZ WHOLE EARTH ... DOWN BY THE RIVER ... ORGANIC GARDENING.

EARTH GARDEN No 7
THE LAND ... TITLES ... MAPS ... AUCTIONS ... THE GOOD COMPANY ... LAND LINES ... ECO-HOSTEL ... FLIGHT FROM THE CITY ... NIMBIN CO-OP ... ANGORA GOATS ... MULBERRIES ... COUNTRY LEATHER ... MAKE A BELT & SHOULDER BAG ... SURVIVAL SKILLS ... SOLAR HOT WATER ... YOUR OWN HEATER ... FEEDBACK ON SHEEP ... A FUNGUS FEAST ... START A SCHOOL ... SCHOOL GARDENS ... RECYCLE A SCHOOL ... SILENT SPRING ... NATURAL DYES ... MUDBRICKS AGAIN! ... NZ COMPOSTING ... ORGANIC OUTLOOK ... SAND GARDENS ... RAGOUT ... BOOKS BY MAIL ... AND LOTS MORE.

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